



**AUDITOR PROVIDED TAX SERVICES, INCOME SHIFTING, AND
DEFAULT RISK**

By

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DECLARATION

I hereby confirm that the work presented in this thesis is my own and original work that has been carried through the School of Accounting and Commercial Law, Victoria University of Wellington, during my candidature as a Ph.D. student. I declare that the material of this thesis has not been submitted either in whole or in part for the award of any other diploma at this or any other university. To the best of my knowledge and belief, it contains no material previously published or written by other person or institutions except where due reference has been made.

Arfian Erma Zudana

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ABSTRACT

This study investigates two capital markets effects of auditor provided tax services (APTS), a particular form of auditor provided non-audit services (APNAS). Firstly, this study examines the influence of APTS on income shifting by United States of America (U.S.) multinational companies and, secondly, this study examines the impact of APTS on default risk of all U.S. companies.

There are two competing hypotheses on the impact of APNAS on the quality of the work of auditors and the empirical evidence is mixed. One strand of literature suggests that APNAS provide knowledge spillover effects and thus improve the quality of the work of the auditor. The other strand of literature suggests that APNAS impair the independence of the auditor and therefore lead to a decrease in the quality of the audit. APNAS may thus increase or decrease the value of audit as a governance mechanism. The U.S. Securities Exchange Commission (SEC) has banned several previously allowed APNAS such as bookkeeping, financial information systems design and implementation, appraisal and valuation, and internal audit. However, the SEC continues to permit auditors to provide tax services.

This study extends the literature on APNAS by examining the effect of APTS on income shifting by multinational companies and on default risk. Using a sample of 10,248 firm-year observations on U.S. multinationals over the period 2002 – 2015 and the income shifting measurement model developed by Dyreng and Markle (2016), this study finds that APTS reduce outbound income shifting, which is consistent with knowledge spillover rather than impairment of independence. The result holds after addressing potential endogeneity concern and

is robust to excluding observations from the financial crisis periods. Furthermore, the result holds after including firm-specific characteristics as influences on the income shifting parameters.

Using a sample of 21,364 firm-year observations on U.S. firms over the period 2003 – 2016, this study finds that APTS have a positive relationship with default risk, consistent with impaired independence of the auditor. The result holds after addressing potential endogeneity concern and is robust to excluding the global financial crisis period. The effects of APTS on income shifting and default risk are therefore opposite in direction. However, the positive relationship between APTS and default risk is weaker for firms with high institutional holdings and a strong information environment, indicating that stronger corporate governance mitigates the impact of APTS on default risk. Furthermore, this study finds that the channel for the effect of APTS on default risk appears to be earnings quality. That is, APTS lower audit quality, thereby lowering earnings quality and increasing default risk. Given the cost of default, this is an important finding.

Thus, taking the results on income shifting and default risk in combination, the question of the SEC continuing to permit auditors to provide tax services is left open to question.

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LIST OF ABBREVIATIONS

ACRONYM	MEANING
APNAS	Auditor Provided Non-audit Services
APTS	Auditor Provided Tax Services
CEO	Chief Executive Officer
EDF	Expected Default Frequency
FASB	Financial Accounting Standards Board
IRS	Internal Revenue Service
PIN	Probability of Insider Trading
PSM	Propensity Score Matching
R&D	Research and Development
SEC	Securities and Exchange Commission
SUR	Seemingly Unrelated Regression
U.K.	United Kingdom
U.S.	United States of America

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CHAPTER ONE

INTRODUCTION

1.1. Introduction

The United States of America (U.S.) Securities Exchange Commission (SEC) has in the past engaged in extensive deliberation on the possibility that auditor provided non-audit services (APNAS) might impair the independence of the auditor. As a result, the SEC banned several previously allowed APNAS such as bookkeeping, financial information systems design and implementation, appraisal and valuation, and internal audit. However, the SEC continues to permit auditors to provide tax services (APTS), a particular form of APNAS. This study investigates two capital market effects of APTS, neither of which has been addressed in the literature. Firstly, this study examines the influence of APTS on income shifting by U.S. multinational companies and, secondly, this study examines the impact of APTS on default risk of U.S. companies.

There are two competing hypotheses on the impact of APNAS on the quality of the work of auditors and the empirical evidence is mixed. APNAS may provide knowledge spillover effects and thus improve the quality of the audit. Alternatively, APNAS may impair the independence of the auditor and therefore lead to a decrease in the quality of the audit. APNAS may thus increase or decrease the value of audit as a governance mechanism.

This study finds that APTS have a downward impact on outward income shifting, consistent with APTS generating knowledge spillover effects. However, this study also finds that APTS are associated with increased default risk,

consistent with impaired independence of the auditor. The findings on the impacts of APTS on income shifting and default risk are therefore opposite in direction.

The rest of this chapter is organized as follows: Section 1.2 presents the motivation and research questions for the thesis. Section 1.3 provides the summary of findings. Section 1.4 presents an overview of the remaining chapters of this thesis.

1.2. Motivation and Research Questions

Both income shifting and default risk are important economic issues. For example, the OECD (OECD, 2015) estimates that tax avoidance activities reduce global tax revenue by 4% to 10%, and income shifting is likely to be a leading factor for this result; Davydenko, Strebulaev, and Zhao (2012) estimate that for U.S. firms the mean (median) cost of default is 21.7% (22.1%) of the market value of assets. Improved understanding of the factors influencing income shifting and default risk is therefore a worthwhile target for research.

Both income shifting and default risk have been the subject of a number of studies. Similarly, the impact of APTS has been studied in relation to a number of capital market effects. However, to date, the possible impact of APTS on income shifting or on default risk has not been addressed in the empirical literature. This study addresses this gap.

The empirical evidence on the impact of APNAS on the quality of audit is mixed. Some studies have found a positive outcome from the joint provision of audit and non-audit services by auditors. Specifically for APTS, Kinney, Palmrose, and Scholz (2004) find a negative association between APTS and restatement of financial statements. Robinson (2008) finds that APTS are

positively related to issue of a correct going-concern opinion prior to the filing for bankruptcy. On the other hand, other studies find that, in general, APNAS impair auditor independence. Frankel, Johnson, Nelson, Kinney, and Libby (2002) find that the level of non-audit fees is related to the likelihood of reporting a small earnings surprise, the size of absolute discretionary accruals, and the magnitude of income increasing and income decreasing discretionary accruals. In a similar vein, Ferguson, Seow, and Young (2004) find evidence that the economic bonding resulting from non-audit services induces auditors to be more lenient on earnings management activities.

The research questions are therefore as follows:

1. Are APTS associated with income shifting by multinational companies?
2. Are APTS associated with default risk?

To address the first research question, this study uses the income shifting model developed by Dyreng and Markle (2016) for analysis of the effect of financial constraints on shifting of domestic and foreign pre-tax earnings. This study applies this model to test, instead, for the impact of APTS on income shifting.

To test the second research question, this study regresses company fees for APTS on a measure of default risk. The primary measure of default risk used is the modified Altman Z-Score (Altman, 1983) but in robustness tests this study also uses two alternative measures, the original Altman Z-Score (Altman, 1968) and the expected default frequency (EDF) developed by Bharath and Shumway (2008).

1.3. Summary of Findings

This study finds that the impacts of APTS on income shifting and default risk are opposite in direction. Using a sample of 10,248 firm-year observations on U.S. multinational companies over the period 2002 – 2015, this study finds that APTS lower income shifting, consistent with knowledge spillover effects. The result holds under tests for impact of firm characteristics and the influence of crisis periods.

To test for the impact of APTS on default risk, this study uses a sample of 21,364 firm-year observations on U.S. firms over the period 2003 – 2016, and this study finds that APTS increase default risk, consistent with impairment of independence. This result is robust to test for the impact of the global financial crisis period and the use of alternative measures of default risk. This study also finds that the positive relationship is stronger with lower institutional holdings. This suggests that stronger corporate governance may mitigate the impact of APTS on default risk. This study also finds that the impact of APTS on default risk is stronger with a higher degree of information asymmetry. Finally, I find evidence that earnings quality may be the channel for the influence of APTS on default risk. That is, APTS lower audit quality, thereby lowering earnings quality and increasing default risk. Given the cost of default, this is an important finding.

The examination of the impact of APTS on the two capital markets phenomena indicates that the effects are opposite in direction. One obvious possible reason for the finding of opposite effects is simply that income shifting relates to just a segment of all U.S. firms whereas default risk applies for all U.S. firms. It is not unusual to find in empirical research that a particular effect is

different across different populations of firms or across different time periods. It may be that the difference results from differing degrees of importance for audit as a governance mechanism. In the case of income shifting the auditor is probably the only external party with a detailed knowledge of income shifting arrangements and therefore plays a key role in managing the risks associated with entering into such arrangements. Furthermore because of the larger size of multinationals, the auditor may provide a higher level of quality in audit services. For default risk, a number of non-audit governance mechanisms may mitigate the impact of APTS as indicated by the tests on institutional holdings and the information environment.

However, taking the results on income shifting and default risk in combination, the question of the SEC continuing to permit auditors to provide tax services is obviously left open to question.

1.4.The Remaining Chapters of the Thesis

Chapter Two presents a review of the literature on APTS and income shifting, develops the hypotheses, and reports the results. Similarly, Chapter Three reviews the empirical literature on default risk, develops the hypotheses on the impact of APTS on default risk, and reports the results. Chapter Four provides the conclusions for the thesis, notes the contributions made, and discusses the limitations of the study. Finally, the chapter provides suggestions for future research.

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CHAPTER TWO

AUDITOR PROVIDED TAX SERVICES AND INCOME SHIFTING

This chapter provides empirical evidence on the impact of APTS on income shifting behaviour of U.S. multinational companies. This chapter begins with an introduction in Section 2.1. Section 2.2 presents a review of the empirical literature on APTS and on income shifting, discussion on the institutional setting, and development of the hypotheses. Section 2.3 provides an explanation of the income shifting model used to test the hypotheses and the sample selection process. Section 2.4 starts with the descriptive statistics of the sample and is followed by the baseline regression results, test for endogeneity, and additional robustness tests. Finally, Section 2.5 concludes the chapter.

2.1. Introduction

This chapter investigates the relationship between APTS and income shifting by U.S. multinational companies. Klassen, Lisowsky, and Mescall (2016) find that more than 80% of companies hire their auditor as their tax advisor. In the empirical capital market literature, APTS and income shifting are generally considered separately (see, for example studies on APTS, Kinney et al. (2004), Robinson (2008), Fortin and Pittman (2008), Krishnan and Visvanathan (2011), Gleason and Mills (2011), Paterson and Valencia (2011), and Gleason, Mills, and Nessa (2018)); for example studies on income shifting, see Collins, Kemsley, and Lang (1998), Rego (2003), Klassen and Laplante (2012a), Klassen and Laplante (2012b), Dharmapala and Riedel (2013), and Dyreng and Markle (2016)). In contrast, this study examines APTS and income shifting simultaneously and thus addresses a significant gap in the literature.

Before the recent amendments to the tax rules, U.S. multinationals were taxed on their worldwide income. However, they were not liable for the U.S. tax on income generated in other countries until it was repatriated to the U.S. For their repatriated and U.S. income, these multinationals faced a high tax rate compared to the rate applied in other countries. This regime, therefore, created an incentive for U.S. multinationals to leave their foreign generated income abroad and to shift their U.S. generated income to low rate foreign jurisdictions. The higher the amount of income shifted by the multinationals, the lower their effective tax rate would be as the higher would be the proportion of income taxed at relatively lower rates. However, this income shifting behaviour could be costly and carry risks such as litigation risk and reputation risk. Furthermore, risky financial arrangements might result from the process of smoothing and concealing this behaviour.

A number of studies indicate that APTS bring positive effects (see, for example, Kinney et al. (2004), Robinson (2008), Gleason and Mills (2011), Paterson and Valencia (2011), Krishnan and Visvanathan (2011), Seetharaman, Sun, and Wang (2011), Lisic (2014), and De Simone, Ege, and Stomberg (2015)). Kinney et al. (2004) find that APTS are negatively related to the restatement of Form 10-K or Form 10-Q. Robinson (2008) finds that APTS induce the issuance of a correct going-concern opinion prior to a bankruptcy filing. Thus, appointment of the auditors as a tax consultant might not impair their independence, on the contrary, APTS could lead auditors to gain a better understanding of their clients operations and therefore a higher probability that auditors would limit managers' opportunistic behaviour such as income shifting activities.

On the other hand, some studies find that APNAS, in general, may impair auditor independence. For example, Frankel et al. (2002) find that the level of non-audit fees is related to the likelihood of reporting a small earnings surprise, the magnitude of absolute discretionary accruals, and the magnitude of income increasing and income-decreasing discretionary accruals. In a similar vein, using three alternative measures of earnings management and APNAS, Ferguson et al. (2004) find that APNAS are related to earnings management. Specifically for APTS, Maydew and Shackelford (2007) argue that APTS may lower the likelihood of audit partners challenging clients' tax work as it has been prepared by their tax colleagues in the same audit firm. Thus, an auditor with lower independence might accommodate the willingness of managers of U.S. multinationals to shift their income to and from foreign jurisdictions irrespective of the associated risks.

Using a sample of 10,248 firm-year observations on U.S. multinationals over the period 2002 – 2015, this study finds that APTS are related to lower income shifting activities which provides supporting evidence for knowledge spillover effects rather than impairment of independence. This result is robust to tests for the impact of financial crisis periods and the influence of firm characteristics.

Studies on APTS include the effect of APTS on (i) earnings quality (Krishnan and Visvanathan, 2011) and (Lisic, 2014), (ii) value relevance (Krishnan, Visvanathan, and Yu, 2013), (iii) corporate debt pricing (Fortin and Pittman, 2008), and (iv) tax avoidance (Cook, Huston, and Omer, 2008) and (McGuire, Omer, and Wang, 2012). Previous studies on income shifting by

multinationals have considered such drivers as dominance of foreign operations (Rego, 2003), mitigation of earnings shocks (Dharmapala and Riedel, 2013), and financial constraints (Dyreng and Markle, 2016). Thus, while previous studies have considered APTS and income shifting separately none have considered the possibility of a link between these phenomena. This study addresses this gap and therefore has the potential to provide evidence on the SEC's policy of continuing to allow auditors to provide tax services.

2.2. Background, Literature Review, and Hypotheses Development

Section 2.2.1 discusses the institutional background of the study. Section 2.2.2 presents the literature review on APTS, and Section 2.2.3 the literature review on income shifting. Next, Section 2.2.4 provides the hypotheses development for this study.

2.2.1. Study Background

Global tax avoidance has reached a critical level. A 2015 OECD report, (OECD, 2015), estimates that avoidance activities reduce global tax revenue by between 4% - 10%. It is believed that aggressive income shifting strategies by multinationals is one of the leading factors. However, it is a more severe problem for countries that have a relatively high corporate tax rate and tax system that incentivizes income shifting activities. Several countries, such as the U.S., have both of those characteristics.

For the year ended 2016, U.S. firms faced a federal corporate tax rate in the range of 15 – 35%. The applicable level in the range increases with increasing income in which the rate for the highest income bracket is 35%. In addition, U.S.

firms face income tax at the state level. This rate varies across the states.¹ According to 2016 OECD data, the combined federal and state U.S. corporate tax rate, on average, is 38.92% which is one of the highest tax rates in the world.² This creates incentives for U.S. multinationals to hide their income in foreign jurisdictions by income shifting scheme.

Aside from the tax rate issue, U.S. multinational companies are also incentivized to shift income by the U.S. worldwide tax system. Before the recent amendments to the tax rules, U.S. firms were taxed on the sum of their domestic and foreign incomes. However, they were not liable for the U.S. tax on income generated in foreign countries until it was repatriated to the U.S. For example, a U.S. multinational operating in Ireland, was liable for tax on income generated in Ireland at the rate of 12.5% but the balance of 26.5% for U.S. tax was not payable until the income was repatriated to the U.S. This tax deferral advantage would be increased by the use of tax havens. Continuing the example, although the income is generated in Ireland, the multinational might have entered into arrangements to effectively shift the income to a tax haven country where an even lower (or zero) rate of tax is imposed. Furthermore, it might be possible for the multinational to shift some of its income generated in the U.S. to Ireland or tax haven countries by transfer pricing or other schemes and thus augment the deferral advantage.

Those factors have provided incentives for U.S. multinationals to shift their income to foreign jurisdictions. Clausing (2009) estimates that \$87 billion was

¹ According to KPMG data, income taxes at local state government level range from 0 – 12%. (see <https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html>)

² The OECD statutory income tax rate data can be found here: https://stats.oecd.org/Index.aspx?DataSetCode=CTS_CIT

shifted out of the U.S. in the year 2002. More recent studies find that U.S. multinationals have become more aggressive income shifters. For example, Klassen and Laplante (2012a) find that, on average, there is an additional \$26 million of shifted income per year during 2005-2009 relative to 1998-2002 for each company. They find that, in aggregate, companies with a low average foreign tax rate shifted \$10 billion per year more out of the U.S. during 2005-2009 than during 1998-2002. Furthermore, specific to target locations, Dyreng and Markle (2016) find that during the 1998 – 2011 period, U.S. multinationals with tax haven operations shifted \$26 million per year more than the multinationals not using tax havens.

2.2.2. Literature Review on Auditor Provided Tax Services

In 2003, in order to strengthen auditor independence, the SEC banned several, previously allowed, APNAS such as bookkeeping, financial information systems design and implementation, appraisal or valuation, actuarial, internal audit, management or human resource services, broker or dealer services, and legal and expert services unrelated to the audit. However, the SEC has continued to permit auditors to provide tax services to their audit clients.

There are two streams of research related on the effect of APTS. On the one hand, there are studies that have provided evidence in support of regulators continuing to allow auditors to serve as tax consultants for their audit clients. On the other hand, other studies conclude that APTS impair independence. The former group of studies support the view that APTS lead to knowledge spillovers and do not impair auditor independence. Simunic (1984) examines the decision of firms to purchase management advisory services and audit services when their

production functions are interrelated and investigates the existence and pricing effect of knowledge spillovers. Using data on 263 U.S. companies during 1976 - 1977, the author finds that firms that purchase management advisory services have higher audit fees compared to firms that do not purchase those services. Simunic (1984) concludes that the observed fee increase is an indication of a beneficial knowledge spillover effect between the services.

Antle, Gordon, Narayanamoorthy, and Zhou (2006) investigate the relationship between audit fees, non-audit fees, and abnormal accruals in a simultaneous equations system. Using 2,294 firm-year observations on U.K. firms during 1994 – 2000, the authors find knowledge spillovers effect from auditing to non-audit services and from non-audit services to auditing. Furthermore, the authors find a negative relationship between non-audit fees and abnormal accruals. They argue that it indicates the productive effects of providing non-audit services.

Kinney et al. (2004) examine the relationship between APNAS and the restatement of financial statements using 617 restating/non-restating pairs of U.S. companies during the period 1995 – 2000. The authors do not find a statistically significant relationship between restatement and financial information system design and implementation fees or internal audit services fees. Further, the authors do find a significant positive relationship between unspecified APNAS and restatements. In contrast, they find a significant negative relationship between tax services fees and restatements. The authors argue that the results are indicative of benefits resulting from APTS.

Robinson (2008) investigates the relationship between APTS and auditor independence as reflected in the issue of correct going-concern opinions. To test the issue, the author uses data on 209 U.S. bankrupt firms over the period 2001 – 2004. The author does not find a significant relationship between either audit or non-audit fees to the probability of issuing a going-concern opinion. However, after dividing the non-audit fees into tax and non-tax fees, the author finds a positive relationship between tax fees and the issuance of a correct going-concern opinion prior to a bankruptcy filing.

Fortin and Pittman (2008) investigate the value of APTS in respect of bondholders. Using 694 public debt issues in the U.S. over the period 2001 - 2005, they find a lower yield spreads for firms that pay proportionately larger tax fees to their auditor. Furthermore, they find that the negative relationship between APTS and yield spread is more pronounced when they isolate issues made by firms with greater information asymmetry. Specifically, they find that the negative relationship is stronger for shorter maturity bonds and financial firms.

Gleason and Mills (2011) investigate the association between APTS and the ability of firms to estimate their tax reserve in the face of an Internal Revenue Service (IRS) investigation. They argue that the provision of tax services by auditors may impair audit quality by lowering auditor independence. On the other hand, APTS may lead to improvement of audit quality, thereby better financial reporting. Using 497 firm-year observations on U.S. firms during the 2000 – 2002 period, the authors find that firms that purchase APTS are better able to estimate the tax contingency and thus have a lower tax reserve. The results are consistent with a knowledge spillover effect.

Paterson and Valencia (2011) investigate the relationship between APNAS and auditor independence and distinguish between recurring and non-recurring APNAS. Using data on 7,042 U.S. firms during the period 2003 – 2006, the authors find that recurring APTS are negatively related to restatements. However, they find that non-recurring APTS are positively related to restatements and thus conclude that the evidence in earlier studies indicating knowledge spillover rather than impairment of independence must have been dominated by recurring assignments.

Krishnan and Visvanathan (2011) examine whether APTS prevent earnings management and whether tax avoidance is related to APTS. Using 1,750 unique U.S. companies during the period 2000 – 2007, they find a negative relationship between APTS and earnings management as measured by loss avoidance. They also find that in the pre-SOX period, APTS are positively related to earnings management, while in the post-SOX period, APTS are negatively related to earnings management. Further, they do not find any evidence of APTS influencing tax avoidance.

Seetharaman et al. (2011) examine the association between APTS and tax-related financial statement restatements in the post-SOX period. Using 2,116 U.S. restatement companies and 150 tax-related restatements companies, the authors find a significant negative relationship between APTS and tax-related financial restatements but they do not find a significant relationship between APTS and general financial restatements.

Lisic (2014) examines the influence of audit committee effectiveness on the relationship between APTS and earnings management through the tax expense

account. Using data on 799 S&P companies at the end of 2003, Lisic (2014) finds that APTS is negatively (positively) related to earnings management through tax expense for firms with audit committee effectiveness above (below) the median in the sample.

Krishnan et al. (2013) investigate the influence of APTS on investors' valuation. Using 27,919 firm-year observations on U.S. firms over 2000 – 2008 period, the authors find a positive relationship between the ratio of tax fees to total fees and the value-relevance of earnings. Moreover, they find a lower value-relevance of earnings in the year when firms switch from auditor to other providers of tax services.

De Simone et al. (2015) examine the relationship between APTS and firms' internal control quality. They argue that purchase of APTS facilitates earlier assessment by the audit firm of the internal control environment relating to material transactions. Consequently, companies are better placed to mitigate internal control deficiencies and early prevent material weaknesses. Using data on 5,830 U.S. companies over the 2004 – 2012 period, they find a negative relationship between APTS and disclosure of material weaknesses and point to impact on internal control quality as a mechanism through which APTS improve overall financial reporting quality.

Gleason et al. (2018) investigate the adequacy and accuracy of tax reserves in term of Financial Accounting Standards Board (FASB) Interpretation No.48 and the influence of APTS on tax reserves. Using 2,798 firm-year observations on U.S. firms over the period 2003 – 2014, they find that both prior- and post- FIN 48, firms are adequately reserved for IRS tax assessments and settlements. They

find that the overall adequacy or accuracy of reserves pre- and post-FIN 48 are not statistically different. Related to the impact of APTS, they find that, overall, firms with low APTS are under-reserved for IRS assessments, while firms with high APTS are over-reserved prior to FIN 48. However, post-FIN 48, there is no difference between the adequacy of tax reserves for firms with a high or low level of APTS. Thus FIN 48 improves the availability of information to the extent of eliminating any significance for the knowledge spillover effect of APTS.

In contrast to the studies summarised above, a number of studies show that APNAS impair auditor independence. Frankel et al. (2002) examine whether the provision of APNAS is related to earnings management. They also examine the market reactions related to the disclosure of auditor fees. Using proxy statements filed by 3,074 U.S. firms during February – June 2001, the authors find a positive relationship between APNAS and the likelihood of reporting a small earnings surprise, the magnitude of absolute discretionary accruals, and the magnitude of income-increasing and income-decreasing discretionary accruals. However, they do not find a significant relationship between APNAS and small earnings surprise for larger firms. Overall, they conclude that the results provide evidence that firms purchasing APNAS engage in a greater degree of earnings management. Further, they find a significant negative relationship between abnormal returns and the disclosure of higher than expected non-audit fees. However, that relationship does not hold when longer event windows are used to measure abnormal returns.

Ferguson et al. (2004) extend previous research by investigating the relationship between the joint provision of audit and APNAS and earnings management using data on 610 United Kingdom (U.K.) firms over the period

1996 – 1998. In general, they find that earnings management is positively related to APNAS. The authors find that the association between APNAS and restatements depends on whether the restatements are related to earnings or the balance sheet. Specifically, they find robust evidence that APNAS are positively related to earnings-related restatements, for all three measures of total non-audit services used in the study. However, they find a positive relationship between non-audit services and balance sheet related restatements for only one of the three measures, namely log of non-audit fees.

Abbott, Parker, Peters, and Raghunandan (2003) using proxy statements filed by 538 U.S. firms during February – June 2001, examine the association between audit committee characteristics and APNAS. They find that firms with audit committees that consist of all independent directors and meet at least four times during the year have a lower ratio of non-audit fees to audit fees.

Krishnan, Sami, and Zhang (2005) examine the relationship between APNAS and earnings response coefficient for the first, second, and third quarters following the release of proxies containing fee disclosures. Using proxy statements filed by 2,816 U.S. firms during 2001, they find a negative relationship between the ratio of non-audit fees to total fees and the earnings response coefficient. They also find a negative relationship between the amount of non-audit fees and the earnings response coefficient. Those relationships exist in the first, second, and third quarters.

Francis and Ke (2006) investigate the effect of mandated fees disclosure on the market perceptions of auditor independence and earnings quality. To test the issue, they use data on 3,133 U.S. firms during the period of 1999 – 2002. They

argue that if fee disclosure contains new information for investors and if they believe that APNAS may impair auditor independence, then investors will value the earnings of firms with higher non-audit fees lower than firms with lower non-audit fees. They find that in the period of the fees disclosure, investors do not discount the earnings of firms that subsequently report high non-audit fees. In contrast, in the year after fees disclosure, the earnings response coefficient of firms with higher non-audit fees is lower than those with lower non-audit fees. Both Krishnan et al. (2005) and Francis and Ke (2006) believe that their results provide evidence that investors perceive higher non-audit fees as impairing auditor independence.

Gaynor, McDaniel, and Neal (2006) examine the effect of mandatory disclosure requirement of APNAS on the decision of audit committees to use APNAS. Based on experimental research with 100 corporate directors, they find that audit committees are more likely to recommend the joint provision if it improves audit quality. However, the authors also find that public disclosure lowers the likelihood of audit committees in approving the joint provision, even when they believe that the joint provision may improve audit quality.

Maydew and Shackelford (2007) examine the influence of accounting events such as accounting scandals, the passage of the Sarbanes-Oxley Act, and SEC and PCAOB's regulatory actions on the changing role of auditors in corporate tax planning. Using a sample of 248 S&P 500 companies as at 31 December 2003, they find that the companies pay their auditor a similar amount of fees for audit and for tax work in the year 2001. However, in the year 2003, the amount paid to audit work was twice than for tax work and in 2004 four times. Nevertheless, the

tax practices of the large accounting firms remained stable and therefore there was a shift in the client base.

The above studies all relate to APNAS but the following two studies specifically relate to APTS. Cook et al. (2008), using a sample of 1,802 firm-year observations on U.S. firms during the period 2000 – 2004, find that APTS fees are associated with greater reductions in third to fourth quarters effective tax rates (ETRs) for companies that would miss consensus earnings forecasts in the absence of tax expense management. Further, they also find that among companies that do not purchase APTS, for those that would miss consensus earnings forecasts absent ETR changes, the ETR decreases are larger than for other companies. Furthermore, the authors find that APTS fees are associated with larger third to fourth quarter ETR decreases in both pre- and post- SOX periods.

McGuire et al. (2012) examine the relationship between auditor tax-specific industry expertise and company tax avoidance. They use data on 2,513 companies during the period 2002 – 2009. The authors find that companies that purchase tax services from a tax expert auditor engage in greater tax avoidance. Furthermore, they find that overall expertise (tax and audit expert) of auditors is related to greater tax avoidance. They argue that this result indicates that auditors with overall expertise are capable of combining their audit and tax expertise to develop tax strategies that benefit clients from both tax and financial statement perspectives.

The concern expressed by Barbara Roper, Consumer Federation of America, at the PCAOB's roundtable on impairment of auditor independence as a consequence of APTS, exemplifies the issue:

“Just back to the issue of opinion shopping. I think the key -- because we're talking about auditor independence here and not auditor efficiency -- is, if you get that advice, that aggressive recommendation, from the tax department of the audit firm, how likely is the auditor to call that advice into question? and he or she significantly less likely to call that advice into question than they would be if the advice came from a third party? and so this idea that there's a special risk to going outside to third parties to -- and you'll get aggressive recommendations, I don't think -- I don't think past experience necessarily bears that out, in terms of the-- some of the recent scandals, but also that the question is, When push comes to shove, will the auditor call that recommendation into question? and I think that becomes significantly less likely if the recommendation came from his own firm.” (PCAOB 2004, 79)

2.2.3. Literature Review on Income Shifting

Collins et al. (1998) examine the extent of income shifting by U.S. multinationals. Using data on 577 manufacturing companies during the period 1984 – 1992, they find that for U.S. multinationals that face higher average foreign tax rates compared to the U.S. tax rate there is stronger evidence of tax-motivated income shifting. They estimate that these multinationals shift approximately \$25-30 million of income per company to the U.S each year. For the full sample, this equals a total transfer of approximately \$34-40 billion of income to the U.S. The authors also test how investors perceive the shifted income. As per their expectation, they find that investors recognize the effects of income shifting on their valuations.

Rego (2003) examines the effect of firm characteristics such as size, profitability, and extent of operations, on tax avoidance activities. Using data on 5,379 U.S. domestic and multinational companies during period 1990 – 1997, the author finds that larger firms, both for the full sample and for just U.S. multinationals, have higher worldwide ETRs than smaller firms. Rego (2003) argues that it supports the argument that larger firms face political costs which

limit their tax avoidance activities. Further, Rego (2003) finds, for the full sample, that firms with higher income have lower worldwide ETRs. Specifically for U.S. multinationals, Rego (2003) finds that worldwide ETRs are decreasing in both U.S. and foreign pre-tax income. The author also finds that multinationals with a higher proportion of foreign operations have lower worldwide and foreign ETRs. These results support the argument that economies of scale plays a significant role in tax planning.

Clausing (2009) examines the relationship between the profit rates of U.S. affiliates and foreign country tax rates and also the influence of income taxes on U.S. multinationals' real operations. Using data on tax and the operations of U.S. multinationals in approximately 60 countries during the period 1982 – 2004, the author finds that a 1 percentage point lower tax rate in a host country compared to the U.S. is related to a 0.5 percentage point higher profit rate for affiliates based in that host country. The author estimates that by 2004, there was more than \$180 billion of corporate income shifted out of the U.S. In terms of real impact, the author estimates that a 1 percentage point reduction in the tax rate difference would increase employment by 1.6%. The results indicate that employment-based tax responses result in approximately \$80 billion lower U.S. profits and about 15% lower U.S. government corporate tax revenues.

Klassen and Laplante (2012a) examine the extent of multijurisdictional income shifting by U.S. multinationals. Further, they also examine whether income shifting has changed over time. Using 8,074 firm-year observations on U.S. companies over the period 1988 – 2009, the authors find that U.S. companies have become more active in income shifting to foreign jurisdictions. Holding tax

rate differences between U.S. and foreign jurisdictions constant, they estimate that among 380 corporations with low average foreign tax rates shifted approximately \$10 billion of additional income out of the United States annually during 2005-2009 relative to 1998-2002. Further, they find that firms with low average foreign tax rates shifted income more aggressively out of the U.S. following declining IRS audit intensity, a beneficial U.S. tax law change, and a marked increase in non-U.S. transfer pricing enforcement activities.

Klassen and Laplante (2012b), using data on 3,829 firm-year observations on U.S. multinationals during the period 1993 – 2006, test whether foreign reinvestment-related incentives influence income shifting by multinationals and whether financial reporting incentives influence income shifting behaviour. They find that firms with low foreign tax rates relative to domestic tax rates shift significantly more income from U.S. to foreign jurisdictions when foreign reinvestment-related incentives are high. Further, they find that more aggressive financial reporting firms and those that report lower tax expense by designating earnings outside the U.S as permanently reinvested, are more responsive to income shifting incentives than other firms even after controlling for reinvestment incentives. This shows that firms with greater financial reporting incentives shift more income out of the U.S.

Dharmapala and Riedel (2013) investigate the income shifting behaviour of multinational companies. Using data on 1,806 subsidiary companies operating in EU-25 countries, except Cyprus, Malta, and Slovenia, the authors find that positive earnings shocks for the parent companies are more strongly related to the increase in pre-tax income of subsidiaries in low-tax countries compared to the

pre-tax income of high-tax affiliates. They find that the estimated effect is mostly related to the strategic use of debt across affiliates.

Dyreng and Markle (2016) examine the influence of financial constraints on income shifting. Using data on 2,058 U.S. multinationals over the period 1998 – 2011, the authors find that financially constrained firms shift less income from the U.S. to foreign countries than do their unconstrained peers. They estimate that financially constrained firms shift out 20% less of pre-shifted income than do unconstrained firms. In dollar term, the mean (median) constrained firm shifts \$16 million (\$7 million) out of the U.S. each year, while the mean (median) unconstrained firm shifts \$321 million (\$134 million) out of the U.S. each year.

2.2.4. Hypotheses Development

Overall assessment of the studies reviewed above suggests that the joint provision of audit and non-audit services improves auditor understanding of their clients, that is provide knowledge spillover effect (Simunic, 1984) and (Antle et al., 2006), thereby increasing the quality of both audit and non-audit work. In addition, overall, the results from these studies indicate that appointment as a tax consultant does not impair auditor independence. Hence, APTS are likely to be negatively related to income shifting behaviour. On the other hand, if it is accepted that auditors are more likely to accommodate managers' behaviour due to their economic bonding to the client, APTS will be positively related to income shifting activities.

Given those two contrasting views regarding the effect of APTS on income shifting, this study tests the following hypotheses:

H1(a): *The joint provision of audit and tax services by auditors has a negative association with income shifting behaviour of U.S. multinationals.*

H1(b): *The joint provision of audit and tax services by auditors has a positive association with income shifting behaviour of U.S. multinationals.*

2.3. Research Design

Section 2.3.1 discusses the income shifting measurement model used to test the hypotheses. Section 2.3.2 explains the construction of the sample.

2.3.1. Measuring Income Shifting

There are at least three basic approaches used in empirical studies to estimate income shifting. The first model is Hines and Rice (1994) which relies on the argument that pre-shifted income in a jurisdiction varies with the jurisdiction's labor, capital, and productivity inputs in a Cobb-Douglas production function. The authors infer income shifting from the movement of income incremental to those inputs factors. As argued by Dyreng and Markle (2016), adaptation of this model at firm-level is challenging as the model is developed for analysis at the jurisdiction level.

Second, the model developed by Collins et al. (1998) which infers income shifting from the co-movement of the rate of return on foreign sales with the rate of return on worldwide sales. Based on this, the authors find that for U.S. multinationals that face average foreign tax rates higher than the U.S. tax rate there is evidence of tax-motivated income shifting. However, Dyreng and Markle (2016) argue that the Collins et al. (1998) approach focussed on net shifting which would reflect the sources of noise affecting estimate of inbound income shifting.

Given the limitations cited above, this study uses the income shifting model developed by Dyreng and Markle (2016) which enables the separation of inbound income shifting and outbound income shifting. The model is developed as follows:

$$\text{PIFO}^* = \text{SALEFO} - \text{EXPFO} \quad (2.1a)$$

$$\text{PIDOM}^* = \text{SALEDOM} - \text{EXPDOM} \quad (2.1b)$$

where:

PIFO^* : unobservable pre-transfer foreign pre-tax earnings.

PIDOM^* : unobservable pre-transfer domestic pre-tax earnings.

SALEFO : foreign sales to third parties.

SALEDOM : domestic sales to third parties.

EXPFO : expenses incurred to generate foreign income from foreign sales to third parties.

EXPDOM : expenses incurred to generate domestic income from domestic sales to third parties.

Equations (2.1a) and (2.1b) can be rewritten as follows:

$$\text{PIFO}^* = \rho_f \text{SALEFO} \quad (2.2a)$$

$$\text{PIDOM}^* = \rho_d \text{SALEDOM} \quad (2.2b)$$

where:

ρ_f : return on sales for pre-transfer foreign pre-tax income.

ρ_d : return on sales for pre-transfer domestic pre-tax income.

To estimate the amount of income shifted, equations (2.2a) and (2.2b) are modified as follows:

$$\text{PIFO} = (1 - \gamma) \rho_f \text{SALEFO} + \theta \rho_d \text{SALEDOM} \quad (2.3a)$$

$$\text{PIDOM} = \gamma\rho_f\text{SALEFO} + (1 - \theta)\rho_d\text{SALEDOM} \quad (2.3b)$$

where:

PIFO : reported post-transfer foreign pre-tax earnings.

PIDOM : reported post-transfer domestic pre-tax earnings.

θ : the fraction of pre-transfer domestic pre-tax earnings that is transferred to reported foreign pre-tax earnings or outbound shifting.

γ : the fraction of pre-transfer foreign pre-tax earnings that is transferred to reported domestic pre-tax earnings or inbound shifting.

Accordingly, equation (2.3a) states that reported pre-tax foreign earnings is the sum of foreign pre-tax earnings not transferred plus pre-tax domestic earnings transferred and equation (2.3b) states that reported pre-tax domestic earnings is the sum of transferred foreign pre-tax earnings plus not transferred domestic pre-tax earnings.

In the spirit of Dharmapala and Riedel (2013) who use earnings shocks to identify income shifting, Dyreng and Markle (2016) modify equations (2.3a) and (2.3b) by restating the variables in change form and by including intercept and error terms. They argue that although the modification uses changes in both sales and income, the parameters generated do not represent changes in income transfers or changes in return on sales. The parameters generated from the equations should be interpreted as the marginal returns on sales, ρ_f and ρ_d , and the fractions of the shock to income that is transferred, θ and γ . The modified equations are:

$$\Delta PIFO_{j,t} = \alpha_o + (1 - \gamma)\rho_f \Delta SALEFO_{j,t} + \theta \rho_d \Delta SALEDOM_{j,t} + \tilde{\epsilon}_{j,t} \quad (2.4a)$$

$$\Delta PIDOM_{j,t} = \beta_o + \gamma \rho_f \Delta SALEFO_{j,t} + (1 - \theta) \rho_d \Delta SALEDOM_{j,t} + u_{j,t} \quad (2.4b)$$

where:

$\Delta PIFO_{j,t}$: foreign pre-tax earnings in year t less foreign pre-tax earnings in year t-1, scaled by total assets in year t-1 of firm j.

$\Delta PIDOM_{j,t}$: domestic pre-tax earnings in year t less domestic pre-tax earnings in year t-1, scaled by total assets in year t-1 of firm j.

$\Delta SALEFO_{j,t}$: foreign sales in year t less foreign sales in year t-1, scaled by total assets in year t-1 of firm j.

$\Delta SALEDOM_{j,t}$: domestic sales in year t less domestic sales in year t-1, scaled by total assets in year t-1 of firm j.

This study focuses on the outbound transfer parameter (θ), rather than the inbound transfer parameter (γ). As Dyreng and Markle (2016) note, there are several reasons for doing that. First, the tax rules on arm's length transfer pricing require companies to transfer their income toward the location in which economic value is added and prior research shows that more than two-thirds of value added of U.S. multinationals is in the U.S (Barefoot and Mataloni 2011). Second, inbound income transfers include the sales made through directly owned foreign branches and also exports of goods directly to foreign customers. Consequently, the inbound transfer parameter contains noise from these sources which could mislead its interpretation.

To include the effect of APTS to test the hypotheses, the inbound and outbound income shifting parameters are written as follows:

$$\theta = \theta_0 + \theta_1 X \quad (2.5a)$$

$$\gamma = \gamma_0 + \gamma_1 X \quad (2.5b)$$

where:

X : is a measure of APTS (in Dyreng and Markle (2016), it is a measure of financial constraints.

θ_0 : base outbound transfer.

γ_0 : base inbound transfer.

θ_1 : incremental effect of APTS on outbound transfer.

γ_1 : incremental effect of APTS on inbound transfer.

Furthermore, the parameters for return on sales can be written as follows:

$$\rho_f = \rho_{f0} + \rho_{f1} X + \sum_c \rho_{fc} C \quad (2.5c)$$

$$\rho_d = \rho_{d0} + \rho_{d1} X + \sum_c \rho_{dc} C \quad (2.5d)$$

where:

ρ_{f0} : base return on sales for pre-transfer foreign pre-tax earnings income.

ρ_{d0} : base return on sales for pre-transfer domestic pre-tax income.

ρ_{f1} : incremental effect of APTS on the return on sales for pre-transfer foreign pre-tax income.

ρ_{d1} : incremental effect of APTS on the return on sales for pre-transfer domestic pre-tax income.

ρ_{fc} : incremental effect of control variables on the return on sales for pre-transfer foreign pre-tax income.

ρ_{dc} : incremental effect of control variables on the return on sales for pre-transfer domestic pre-tax income.

C : vector of control variables.

The estimation equations are then formed by substituting of equations (2.5a), (2.5b), (2.5c), and (2.5d) in equations (2.4a) and (2.4b):

$$\begin{aligned} \Delta PIFO = & \alpha_0 + (1 - [\gamma_0 + \gamma_1 X])[\rho_{f0} + \rho_{f1} X + \sum_c \rho_{fc} C_c] \Delta SALEFO + \\ & [\theta_0 + \theta_1 X] [\rho_{d0} + \rho_{d1} X + \sum_c \rho_{dc} C_c] \Delta SALEDOM + \varepsilon \end{aligned} \quad (2.6a)$$

$$\begin{aligned} \Delta PIDOM = & \beta_0 + [\gamma_0 + \gamma_1 X] [\rho_{f0} + \rho_{f1} X + \sum_c \rho_{fc} C_c] \Delta SALEFO + \\ & (1 - [\theta_0 + \theta_1 X]) [\rho_{d0} + \rho_{d1} X + \sum_c \rho_{dc} C_c] \Delta SALEDOM + u \end{aligned} \quad (2.6b)$$

Equations (2.6a) and (2.6b) are estimated by seemingly unrelated regression (SUR)³ as this allows estimation of the shifting and returns parameters with associated test statistics in a single-stage estimation. As a consequence, the parameters are estimated based on the conditions applying in both equations of the model. H1(a) will be supported if θ_1 is found to be negative, while H1(b) will be supported if θ_1 is found to be positive.

³ Seemingly unrelated regression (SUR) deals with estimation of several equations as a set. The equations each have their own dependent variable but potentially different sets of explanatory variables. Each equation is a valid linear regression on its own but the error terms are assumed to be correlated across the equations. Each equation could be estimated by OLS. However, while the estimates would be consistent, they would not be as efficient as obtained by the SUR method. SUR is identical to OLS if either the errors are in fact uncorrelated or the regressors are all the same.

Following Krishnan and Visvanathan (2011), this study measures APTS as tax fees paid (in thousand dollars) scaled by the square root of total assets (*TAXFEES*). As bigger firms are more likely to pay higher tax fees, by deflating tax fees with total assets, this study mitigates the possibility that the result generated from estimating equations (2.6a) and (2.6b) is just a reflection of the size effect. For example, bigger firms may shift their income more than smaller firms since they have the resources to do so.

To control for the effect of firm-level characteristics that may influence the return on sales parameters which would then lower the ability to effectively observe the income shifting parameters, this study includes worldwide return on sales (*WWROS*) to control for the overall profitability that is unaffected by income shifting, the ratio of cash to total assets (*CTA*) to control the possibility that firms with significant cash holdings may have different rates of returns due to favourable cost of financing, log of total assets (*LNTA*) to control the effect of size on the rates of returns, and the ratio of intangible to total assets (*ITA*) to control for profitability differences that may be related to the firms' assets intangibility.

Furthermore, this study also includes as control variables the ratio of foreign sales to total sales (*FTS*) to control for the possibility multinationals may enjoy systematically different rates of profitability on domestic and foreign sales, the ratio of debt to total assets (*DTA*) to control for the possibility that firms with higher leverage have higher financial sophistication which then influences rates of returns, R&D expense (*R&DEXP*) to control the effects of R&D expense tax treatment, and advertising expense (*ADVEXP*) to control the effects of advertising expense on return on sales. These control variables are similar to those used in

Dyreng and Markle (2016). In Appendix 1, this study provides detailed definitions of the measures of all the variables used in the study.

2.3.2. Sample

The sample for this study consists of observations on U.S. multinationals between the years 2002 - 2015 for which the data is available at the Compustat database. This study then merges that data with audit fees information available in the Audit Analytics database. The sample period begins in 2002 because tax fees disclosures were limited prior to that year. The sample ends in the year 2015 to mitigate the possibility that multinationals alter their income shifting behaviour due to the 2016 presidential campaign where both candidates raised the issue of reform of business taxation.

Table 2. 1. Sample Selection – APTS and Income Shifting

Criteria	Firms	Firm-Year
U.S. multinational firms with available information on audit fees during the period 2002 – 2015 with foreign and domestic sales summing to within 1 percent of total sales, foreign and domestic pre-tax income summing to within 1 percent of total pre-tax income, firms with domestic sales and foreign sales both more than \$1 million.	3,723	26,023
Less regulated firms (SIC 4900 – 4999, SIC 6000 – 6999) and flow-through tax entities.	3,461	24,308
Less firms with assets in current and previous year less than \$1 million and firms with special items more than 10% of sales	3,448	24,018
Less firms with missing data necessary to calculate the variables used to test the hypotheses, firms with zero tax fees, and observations with Cook’s Distance score in the top 2%.	1,762	10,248

This study eliminates observations with foreign and domestic sales values less than \$1 million. To ensure that companies with high intra-company transactions are deleted, observations are dropped if the sum of foreign and

domestic sales is not within 1% of total sales or the sum of foreign and domestic pre-tax income is not within 1% of total pre-tax income. As in Dyreng and Markle (2016), this study drops regulated utility and financial companies and flow-through tax entities. To delete very small multinationals, this study drops companies with current and previous total assets less than \$1 million. Furthermore, companies with special items more than 10% of revenue are also dropped to ensure that most of the multinational's pre-tax earnings result from transactions with third-party customers.

To make sure that the result is not driven by just a few influential observations, this study eliminates any observations with a Cook's Distance score in the top 2% of the sample for each test model, similar to Dyreng and Markle (2016). Cook's Distance is chosen as the elimination tool as it is a multivariate measure and this study, therefore, deletes extreme observations based on the inter-relationships of all variables included in the estimation model.

Following previous literature Dyreng, Hanlon, and Maydew (2008) and Dyreng et al. (2010), this study sets the value of research and development expenses and advertising expenses to 0 if the data for those expenses are missing from the Compustat database. To mitigate the possibility that U.S. multinationals have zero tax fees due to hiring tax specialists other than their auditors, this study deletes observations with zero APTS fees. In other words, this study examines the influence of APTS on income shifting conditional on the firms purchasing tax services from their auditors. This study summarises the sample selection process in Table 2.1.

2.4. Empirical Results: Auditor Provided Tax Services and Income Shifting

This section presents the findings on the influence of the APTS on income shifting. Section 2.4.1 reports the descriptive statistics of the sample including the correlations among the test variables. In section 2.4.2, this study reports the baseline result. In Section 2.4.3, this study reports the results of addressing potential endogeneity. Section 2.4.4 gives the results for robustness tests.

2.4.1. Descriptive Statistics

Table 2.2 shows the descriptive statistics of the sample. The mean (median) value of Δ PIFO is 0.4% (0.2%); the mean (median) value of Δ PIDOM is 0.05% (0.05%); the mean (median) value of Δ SALEFO is 3.3% (2.1%); the mean (median) value of Δ SALEDOM is 3.3% (2%); The mean (median) value of APTS measure, *TAXFEES*, is 10.61 (6.792); the mean (median) value of *WWROS* is 6% (6.8%); the mean (median) value of *R&DEXP* is 6% (1.9%); the mean (median) value of *ADVEXP* is 1.1% (0%); the mean (median) value of *FTS* is 41.5% (40.4%); the mean (median) value of *CTA* is 13.4% (10.3%); the mean (median) value of *DTA* is 17.1% (14.6%); the mean (median) value of *ITA* is 22% (18%); the mean (median) value of *MERGE* is 0.526 (1); the mean (median) value of *NOL* is 0.633 (1); the mean (median) value of *CAPINT* is 20.9% (15.9%); the mean (median) value of *AUDINDEP* is 10.6% (4.5%); the mean (median) value of *LEVERAGE* is 38% (15.3%); the mean (median) value of *AUDFEES* is 14.46 (14.46); and the mean value of *LNTA* is 7.160 which is the same as the median value (7.160).

In Appendix 2, this study provides the correlation matrix for all of the variables used in the study. The pairwise correlations are broadly consistent with

expectations but individual values are of limited significance as the association of APTS with income shifting is tested in a multivariate context. Importantly, the correlations are not indicative of multicollinearity being a problem for estimation of the test model.

Table 2. 2. Descriptive Statistics – APTS and Income Shifting

This table shows the descriptive statistics of 10,248 U.S. multinationals for period 2002 – 2015 in the sample. Appendix 1 provides a detailed description of the variables.

Variable	N	Mean	Median	STD	Min	P25	P75	Max
ΔPIFO	10,248	0.004	0.002	0.033	-0.211	-0.006	0.014	0.290
ΔPIDOM	10,248	0.005	0.005	0.075	-0.468	-0.019	0.029	0.586
ΔSALEFO	10,248	0.033	0.021	0.111	-1.005	-0.007	0.066	1.048
ΔSALEDOM	10,248	0.033	0.020	0.149	-1.397	-0.016	0.074	3.057
TAXFEES	10,248	10.61	6.792	12.29	0.001	2.441	14.21	141.9
ATS	10,248	0.499	0.000	0.500	0.000	0.000	1.000	1.000
WWROS	10,248	0.060	0.068	0.140	-0.531	0.013	0.129	0.404
R&DEXP	10,248	0.060	0.019	0.084	0.000	0.000	0.092	0.381
ADVEXP	10,248	0.011	0.000	0.025	0.000	0.000	0.008	0.148
FTS	10,248	0.415	0.404	0.229	0.020	0.231	0.578	0.950
CTA	10,248	0.134	0.103	0.115	0.003	0.048	0.188	0.535
DTA	10,248	0.171	0.146	0.167	0.000	0.008	0.267	0.744
LNTA	10,248	7.160	7.160	1.773	3.133	5.971	8.339	11.43
ITA	10,248	0.220	0.180	0.186	0.000	0.061	0.342	0.736
MERGER	10,248	0.526	1.000	0.499	0.000	0.000	1.000	1.000
NOL	10,248	0.633	1.000	0.482	0.000	0.000	1.000	1.000
CAPINT	10,248	0.209	0.159	0.178	0.015	0.082	0.276	0.870
INSTOWN	10,248	0.485	0.489	0.281	0.000	0.233	0.725	0.951
AUDINDEP	10,248	0.106	0.045	0.169	0.000	0.008	0.122	0.988
AUDTENURE	10,248	12.78	10.00	9.821	1.000	5.000	17.00	40.00
LEVERAGE	10,248	0.380	0.153	0.818	0.000	0.024	0.362	6.124
AUDFEES	10,248	14.46	14.46	1.077	11.86	13.80	15.17	17.14
AUDCHANGE	10,248	0.045	0.000	0.207	0.000	0.000	0.000	1.000

2.4.2. Baseline Result

Table 2.3 presents the result when the equations (2.6a) and (2.6b) are estimated using SUR. Column 1 shows the result when those equations are estimated without the inclusion of any test or control variables and the estimates are thus the unconditional means effect of the parameters. The results show that

on average, U.S. multinationals shift 5.1% (significant at 5% level) of their pre-transfer domestic pre-tax income into foreign pre-tax earnings.

Furthermore, Column 1 shows that U.S. multinationals in the sample shift approximately 42.2% of their pre-transfer foreign pre-tax income to the U.S. The inbound shifting parameter, as expected, is higher than the outbound shifting parameter since the inbound shifting parameter contains severe noise, as explained above. For the return on sales parameters, Column 1 indicates that U.S. multinationals have a higher on sales return in foreign jurisdictions.

Table 2. 3. Baseline Result - APTS and Income Shifting

This table shows the results for the impact of auditor provided tax services on income shifting. Column 1 shows the result for the model without *TAXFEES* and the control variables. Column 2 shows the results when *TAXFEES* and the control variables on the return on sales parameters are included. The p-values are shown in brackets. Standard errors are clustered at the firm and year level. All continuous variables are mean centered. Definitions of variables are given in Appendix 1. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent levels, respectively.

	Income Shifting	
	Column 1	Column 2
Outbound Transfer		
θ_0	0.051** (0.018)	0.050** (0.023)
θ_1		-0.005** (0.047)
Inbound Transfer		
γ_0	0.422*** (0.000)	0.420*** (0.000)
γ_1		0.001 (0.846)
Return on Domestic Sales		
ρ_{d0}	0.091*** (0.000)	0.111*** (0.000)
ρ_{d1}		-0.001 (0.283)
Return on Foreign Sales		
ρ_{f0}	0.165*** (0.000)	0.155*** (0.000)
ρ_{f1}		-0.001 (0.249)
Additional control on ρ_d and ρ_f	No	Yes
Intercept (Δ PIDOM equation)	0.005*** (0.000)	0.005*** (0.000)
Intercept (Δ PIFO equation)	0.004*** (0.000)	0.003*** (0.000)
Rsquare Δ Pidom	0.0496	0.0593
Rsquare Δ Pifo	0.1094	0.1195
N	10,248	10,248

Column 2 of Table 2.3 shows the results when *TAXFEES* and the control variables on the return on sales parameters are included to estimate equations (2.6a) and (2.6b). The results show that the parameter of APTS on outbound shifting (θ_1) is -0.005, and significant at the 5% level. This shows that U.S. multinationals with a higher level of *TAXFEES* have lower outbound income shifting activities compared to those with a lower level of *TAXFEES*. The result presented in Table 2.3, therefore, supports the hypothesis H1(a) that APTS are negatively related to outbound income shifting. This evidence supports the argument that APTS limit the motivation of managers to engage in income shifting behaviour and thus rejects impairment of auditor independence. However, the estimate of the incremental impact of APTS on inbound shifting, γ_1 , is not significant. Similarly, the incremental effect for APTS on the return on sales for both domestic and foreign sales are not significant.

2.4.3. Endogeneity Test

This section performs a test to address potential endogeneity in respect of firms' decision to purchase tax services from auditors. Previous studies find that the decision to purchase tax services from auditors is a deliberate decision and driven by several factors (see, for example, Omer, Bedard, and Falsetta (2006), Lassila, Omer, Shelley, and Smith (2010), McGuire et al. (2012), Krishnan and Visvanathan (2011), Krishnan et al. (2013), and Gleason et al. (2018)). The potential endogeneity is addressed using a two-stage model (Heckman, 1979). In the first-stage, involves estimation of the following probit regression model:

$$\begin{aligned}
Prob(ATSt) = & \alpha + \beta_1 MERGER_{j,t} + \beta_2 NOL_{j,t} \\
& + \beta_3 CAPINT_{j,t} + \beta_4 INSTOWN_{j,t} \\
& + \beta_5 AUDINDEP_{j,t} + \beta_6 AUDTENURE_{j,t} \\
& + \beta_7 LEVERAGE_{j,t} + \beta_8 AUDFEES_{j,t} \\
& + \beta_9 AUDCHANGE_{j,t} + \beta_{10} WWROS_{j,t} \\
& + \beta_{11} FTS_{j,t} + \beta_{12} CTA_{j,t} + \beta_{13} DTA_{j,t} \\
& + \beta_{14} LNNTA_{j,t} + \beta_{15} ITA_{j,t} + \beta_{16} R\&DEXP_{j,t} + \beta_{17} ADVEXP_{j,t} \\
& + \beta_{18} INDUSTRYDUMMY + \beta_{19} YEARDUMMY \\
& + e_{j,t}
\end{aligned} \tag{2.7}$$

Following Gleason et al. (2018), *ATS* is an indicator variable equal to one if a firm's auditor tax fee is above the yearly median of sample firms and 0 otherwise. Similar to McGuire et al. (2012) and Gleason et al. (2018), Several exclusionary variables are included: *MERGER*, an indicator variable coded one if there is merger activity; *NOL*, a dummy variable coded one if there is a tax loss carry forward; *CAPINT*, the ratio of net property, plant, and equipment to total assets in previous year; *INSTOWN*, the average of institutional ownership during the year;⁴ *AUDINDEP*, the ratio of non-audit fees to audit fees; *AUDTENURE*, the number of years the auditor has served the company; *LEVERAGE*, sum of the book value of short-term and long-term debt deflated by the book value of equity; *AUDFEES*, natural logarithm of audit fees; *AUDCHANGE*, a dummy variable equal to one if the firm changed the auditor from the prior year. In addition, the control variables used in estimation of equations (2.6a) and (2.6b) are also included. The inverse Mills ratio generated from the first-stage regression is then included in the estimation of equations (2.6a) and (2.6b). Appendix 1 provides detailed definitions of the measures used for all the variables.

⁴ This study uses the average of institutional ownership instead of the percentage of institutional ownership at the beginning year as in Gleason et al. (2018) because of the possibility that the decision to purchase tax services from the incumbent auditor may occur during the year.

The result of estimating the equation (2.7) is presented in Table 2.4. Column 1 shows the result when only exclusionary variables are included as in previous studies (McGuire et al. (2012) and Gleason et al. (2018)). The results show that the decision to purchase tax services from auditors, *ATS*, is significant and positively related to *INSTOWN*, *AUDINDEP*, *AUDFEES*, and *AUDTENURE*, while it is significant and negatively related to *LEVERAGE* and *AUDCHANGE*. Column 2 shows the results of estimating the full model where all the control variables are included. The results show that the probability to purchase tax service from auditors, *ATS*, is significant and positively related to *INSTOWN*, *AUDINDEP*, *AUDTENURE*, *AUDFEES*, *FTS*, *CTA*, *DTA*, *LNTA*, and *ITA*, whereas it is significant and negatively related to *LEVERAGE*, *AUDCHANGE*, and *R&DEXP*.

Column 2 of Table 2.4 shows that the probability of firms hiring their auditor as a tax consultant is lower when they have higher R&D expense. This may be related to the advantageous tax treatment effect of that expense. Consequently, U.S. multinationals can substitute for the tax benefits from using tax consultant by R&D expense. Importantly, the probability of hiring auditors as tax consultants is positively related to the auditor independence from the client, *AUDINDEP*. This may indicate that the decision to purchase tax services from auditors does not impair the independence of auditors, which supports the baseline result. Further, the selection score (area under the ROC Curve) for the full model is 0.8200 which suggest that the selection model has excellent discriminatory power.

Table 2. 4. First-Stage Model - APTS and Income Shifting

This table shows the regression result for the first-stage regression for the base and full models. Continuous variables are winsorized at the 1 and 99 percent levels. The p-values are shown in brackets. Appendix 1 provides definitions of the variables. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>ATS</i>	
	Column 1	Column 2
MERGER _t	0.015 (0.602)	-0.042 (0.174)
NOL _t	-0.049 (0.106)	-0.049 (0.112)
CAPINT _t	0.178 (0.104)	0.059 (0.649)
INSTOWN _t	0.507*** (0.000)	0.364*** (0.000)
AUDINDEP _t	0.421*** (0.000)	0.219** (0.018)
AUDTENURE _t	0.012*** (0.000)	0.010*** (0.000)
LEVERAGE _t	-0.046** (0.015)	-0.066*** (0.003)
AUDFEES _t	0.750*** (0.000)	0.454*** (0.000)
AUDCHANGE _t	-0.153** (0.041)	-0.142* (0.060)
WWROS _t		0.107 (0.393)
FTS _t		0.263*** (0.000)
CTA _t		0.389** (0.016)
DTA _t		0.357*** (0.001)
LNTA _t		0.201*** (0.000)
ITA _t		0.320*** (0.003)
R&DEXP _t		-0.410* (0.066)
ADVEXP _t		-0.463 (0.468)
Constant	-8.947*** (0.000)	-6.371*** (0.000)
Area under ROC Curve	0.8132	0.8200
Year Fixed-Effect	Yes	Yes
Industry Fixed-Effect	Yes	Yes
Pseudo R-square	0.2404	0.2516
N	10,248	10,248

Table 2.5 shows the result when the inverse Mills ratio, *INVERSEMILLS*, generated from the first-stage regression is included to estimate the parameters for

Table 2. 5. Endogeneity - APTS and Income Shifting

This table shows the results for the impact of auditor provided tax services on income shifting after correcting for endogeneity. The p-values are shown in brackets. Standard errors are clustered at the firm and year level. All continuous variables are mean centered. Appendix 1 provides definitions of the variables. *, **, ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	Income Shifting
Outbound Transfer	
θ_0	0.096*** (0.000)
θ_1	-0.003* (0.085)
$\theta_{inversemills}$	-0.123*** (0.001)
Inbound Transfer	
γ_0	0.371*** (0.000)
γ_1	0.001 (0.548)
$\gamma_{inversemills}$	0.197*** (0.000)
Return on Domestic Sales	
ρ_{d0}	0.123*** (0.000)
ρ_{d1}	-0.001 (0.519)
$\rho_{dinversemills}$	-0.052** (0.042)
Return on Foreign Sales	
ρ_{f0}	0.143*** (0.000)
ρ_{f1}	-0.001 (0.365)
$\rho_{finversemills}$	0.050* (0.100)
Additional control on ρ_d and ρ_f	
Intercept ($\Delta PIDOM$ equation)	Yes 0.005*** (0.000)
Intercept ($\Delta PIFO$ equation)	0.003*** (0.000)
Rsquare $\Delta PIDOM$	0.0612
Rsquare $\Delta PIFO$	0.1224
N	10,248

income shifting and return on sales in equations (2.6a) and (2.6b). The estimate of the incremental effect of APTS on outward shifting (θ_1) remains negative (-

0.003), but is now significant at the 10% level. Although the coefficient on the inverse Mills ratio, *INVERSEMILLS*, is significant and negative, the results are qualitatively similar to the baseline result.

2.4.4. Additional Tests

To check the robustness of the findings, several additional tests are conducted. First, observations from the global financial crisis year, 2008 – 2009 are excluded, as the crisis may have influenced the decision on income shifting.

Table 2. 6. Crisis Periods – APTS and Income Shifting

This table shows the results for the impact of auditor provided tax services on income shifting. Column 1 shows the result when observations during the global financial crisis, 2008 – 2009 are excluded. Column 2 shows the result when observations during the Dot-com crisis, 2002 and global financial crisis, 2008 – 2009 are excluded. The p-values are shown in brackets. Standard errors are clustered at the firm and year level. All continuous variables are mean centered. Appendix 1 provides definitions of the variables. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	Income Shifting	
	Column 1	Column 2
Outbound Transfer		
θ_0	0.030 (0.192)	0.028 (0.217)
θ_1	-0.005** (0.031)	-0.006*** (0.010)
Inbound Transfer		
γ_0	0.444*** (0.000)	0.448*** (0.000)
γ_1	0.002 (0.301)	0.001 (0.395)
Return on Domestic Sales		
ρ_{d0}	0.107*** (0.000)	0.115*** (0.000)
ρ_{d1}	-0.001** (0.019)	-0.001*** (0.001)
Return on Foreign Sales		
ρ_{f0}	0.157*** (0.000)	0.160*** (0.000)
ρ_{f1}	-0.001 (0.165)	-0.001 (0.250)
Additional control on ρ_d and ρ_f		
Intercept (Δ PIDOM equation)	Yes 0.007*** (0.000)	Yes 0.007*** (0.000)
Intercept (Δ PIFO equation)	Yes 0.005*** (0.000)	Yes 0.005*** (0.000)
Rsquare Δ Pidom	0.0689	0.0778
Rsquare Δ Pifo	0.1162	0.1223
N	8,770	8,374

The result is presented in Column 1 of Table 2.6. The result supports the baseline result, the parameter of outbound income shifting affected by APTS, θ_1 , remains negative (-0.005) and significant at 5% level. Further, observations during the Dot.com crisis, 2002 and the global financial crisis, 2008 – 2009 are excluded. The results are reported in Column 2 of Table 2.6. It shows that θ_1 parameter remains negative (-0.006) and significant at 1% level. Overall, Table 2.6 shows that the baseline result is not driven by the effect of the financial crisis periods.

An additional test to allow income shifting to vary with firm characteristics is conducted by expanding equations (2.5a) and (2.5b) to include the control variables. The results are presented in Table 2.7. Importantly, the incremental effect of APTS on outbound income shifting remains negative (-0.003) and significant at 10% level. This shows that the baseline result is robust to consideration of the firm-specific characteristics that may influence income shifting. The outbound income shifting is lower for higher worldwide return on sales, *WWROS*. In addition, worldwide return on sales, *WWROS*, is also positively related to return on foreign sales. This may imply that U.S. multinationals try to keep their money abroad when they have a higher worldwide return on sales. Outbound income shifting is also lower for higher R&D expenses. This may signal that the tax treatment benefits of R&D expense can lower the motivation of U.S. multinationals to shift their income abroad.

Table 2. 7. Firm Characteristics - APTS and Income Shifting

This table shows the results for the impact of auditor provided tax services on income shifting when control variables are included in the equations for both the income shifting and return on sales parameters. The p-values are shown in brackets. Standard errors are clustered at the firm and year level. All continuous variables are mean centered. Appendix 1 provides definitions of the variables. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	Income Shifting
Outbound Transfer	
θ_0	0.165*** (0.000)
$\theta_{TAXFEES}$	-0.003* (0.066)
θ_{WWROS}	-0.914*** (0.000)
$\theta_{R\&DEXP}$	-0.701*** (0.009)
θ_{ADVEXP}	0.152 (0.823)
θ_{FTS}	0.274*** (0.007)
θ_{CTA}	0.112 (0.522)
θ_{DTA}	0.092 (0.511)
θ_{LNNTA}	0.046*** (0.000)
θ_{ITA}	0.266* (0.079)
Inbound Transfer	
γ_0	0.272*** (0.000)
$\gamma_{TAXFEES}$	0.001 (0.417)
γ_{WWROS}	-0.501** (0.034)
$\gamma_{R\&DEXP}$	1.015*** (0.000)
γ_{ADVEXP}	0.807 (0.124)
γ_{FTS}	0.358** (0.012)
γ_{CTA}	-0.171 (0.397)
γ_{DTA}	-0.251 (0.311)
γ_{LNNTA}	-0.025 (0.124)
γ_{ITA}	-0.401 (0.150)
Return on Domestic Sales	
ρ_{d0}	0.126*** (0.000)
$\rho_{d TAXFEES}$	0.001 (0.573)
$\rho_{d WWROS}$	0.192*** (0.000)

ρ_d R&DEXP	0.396*** (0.003)
ρ_d ADVEXP	0.220 (0.357)
ρ_d FTS	0.059* (0.099)
ρ_d CTA	-0.022 (0.740)
ρ_d DTA	0.013 (0.760)
ρ_d LNTA	-0.003 (0.427)
ρ_d ITA	-0.110*** (0.001)
Return on Foreign Sales	
ρ_{f0}	0.136*** (0.000)
ρ_f TAXFEES	-0.001 (0.224)
ρ_f WWROS	0.234*** (0.001)
ρ_f R&DEXP	0.436*** (0.001)
ρ_f ADVEXP	1.071*** (0.000)
ρ_f FTS	0.145*** (0.000)
ρ_f CTA	0.022 (0.765)
ρ_f DTA	-0.121*** (0.004)
ρ_f LNTA	-0.005 (0.257)
ρ_f ITA	-0.087* (0.055)
Intercept (Δ PIDOM equation)	0.004*** (0.000)
Intercept (Δ PIFO equation)	0.004*** (0.000)
Rsquare Δ Pidom	0.0731
Rsquare Δ Pifo	0.1249
N	10,248

2.5. Conclusion

U.S. multinationals are motivated to send their income abroad as a result of disadvantages of the U.S. tax system such as a high income tax rate and, until recently, being taxed on their worldwide income. Using the income shifting measurement model developed by Dyreng and Markle (2016), this study finds supporting evidence that APTS reduce outbound income shifting. This is

consistent with the knowledge spillover view of APNAS rather than the impairment of independence view. This, therefore, supports hypothesis H1(a) that APTS have a negative association with income shifting behaviour of U.S. multinationals. The results provide evidence that supports continuing to allow auditors to provide tax services to their audit clients. The result holds after addressing potential endogeneity and is robust to excluding observations from the financial crisis periods. Furthermore, the result holds after including firm-specific characteristics as influences on the income shifting parameters.

CHAPTER THREE

AUDITOR PROVIDED TAX SERVICES AND DEFAULT RISK

This chapter provides empirical evidence on the impact of APTS on default risk. This chapter begins with an introduction as in Section 3.1. Section 3.2 presents a review of the empirical literature on default risk and develops the hypotheses. Section 3.3 discusses the measures of default risk, the research design, and the sample selection criteria. Section 3.4 reports the descriptive statistics of the sample, results of the baseline regression, test for endogeneity, and results of the robustness test. Section 3.5 and 3.6 report the results on the influence of institutional ownership and information environment on the relationship between APTS and default risk, respectively. Section 3.7 presents the results on the channel through which APTS influence default risk. Finally, Section 3.8 concludes the chapter.

3.1. Introduction

In general, financial distress is a situation where a company's activities are influenced by the possibility of failure. Severe financial distress is likely to significantly disrupt the operation of the firm with management attention diverted away from normal business activities, higher cost of capital, and relationship with customers and suppliers may become stressed.

There are different states of financial distress leading to technical default, default, and bankruptcy. The early stages are characterized by poor performance and decline in cash flow. Continued negative outcomes may lead to technical default where the firm is unable to meet the terms (covenants) of its debt contracts (other than obligation to make interest and principal payment). Covenants may be

able to be re-negotiated but failure to do and/or inability to make interest and principal payment will result in default, which, if ongoing, will lead to bankruptcy – a legal process which may involve liquidation. While there are these different states of financial distress, the term “default risk” is used on the capital market literature to indicate risk relating to financial distress. That is the sense default risk is used in this study.

Default risk is a matter of serious concern to investors and, generally, to government. There has thus been extensive research on cost of defaults (see, for example, Davydenko et al. (2012) and Glover (2016)) and on the factors likely to influence default risk (see, for example, Giesecke, Longstaff, Schaefer, and Strebulaev (2011), Hsu, Lee, Liu, and Zhang (2015), Bennett, Guntay, and Unal (2015), and Brogaard, Li, and Xia (2017)). However, none of the studies investigate the impact of APTS on default risk despite the extensive use of APTS (Klassen et al., 2016).

Audit has the potential to enhance the credibility of the financial information reported by the firm and is one of the elements of the firm’s portfolio of governance mechanisms. As discussed in Chapter Two, the simultaneous provision of audit and APNAS has the potential to provide knowledge spillover effect and thus improves the work of the auditor. However, APNAS may instead impair the independence of the auditor and therefore lead to a decrease in the quality of the auditor. APNAS may thus improve or detract from the value of audit as a governance mechanism. Specifically, APTS may have a positive or negative impact on firm governance and hence may reduce or increase default risk.

The competing hypotheses are tested using a sample of 21,364 firm-year observations on U.S. firms over the period 2003 – 2016. APTS are found to have a significant positive relationship with default risk, indicating that APTS impair auditor independence and audit quality, thereby increasing default risk. Heckman’s two-stage procedure is used to address potential endogeneity and the result continues to hold. The result is robust to using alternative measure of default risk and to excluding the global financial crisis period. During the crisis period default risk would be anticipated to be higher and therefore maintenance of my baseline result indicates that it is not driven by the crisis period.

If the positive relationship between APTS and default risk reflects the impairment of auditor independence, other corporate governance mechanisms might mitigate the effect of APTS. To test this conjecture, institutional holdings are used as an external governance mechanism (see, for example, Hartzell and Starks (2003) and Chen, Harford, and Li (2007)). The positive relationship between APTS and default risk is expected to be lower for firms with stronger governance. As expected, the results confirm that the positive relationship between APTS and default risk is stronger for firms with lower institutional holdings.

Goyal and Wang (2013) argue that firms with favorable private information prefer short-term debt, while those with unfavorable private information prefer long-term debt. That is, short-term debt issuers will actually have lower default risk, while long-term debt issuers will actually have higher default risk. Liao, Chen, and Lu (2009) suggest that the information asymmetry between informed

and uninformed traders results in deviations from a firm's correct credit risk assessment. Therefore, this study examines whether the strength of the relationship between the APTS and default risk depends on the degree of information asymmetry among investors in the firm. The results show that the higher the degree of information asymmetry, as reflected by lower analyst following, the higher the probability of informed trading, and the lower the stock liquidity, the stronger is the positive relationship between APTS and default risk. That is the positive relationship may just reflect high information asymmetry rather than APTS.

Finally, this study tests the channel through which APTS might increase default risk. If APTS impair auditor independence, earnings quality resulting from the audit process for firms with high APTS should be lower than for firms with low APTS. To provide evidence on this possible channel, this study examines the relationship between APTS and earnings quality. The results show that APTS are negatively related to earnings quality. This result provides evidence that APTS increase default risk through the impairment of auditor independence which then results in lower earnings quality.

This study makes a number of contributions. First, it adds to the prior literature on the factors influencing company default risk (see, for example, Giesecke et al. (2011), Hsu et al. (2015), Bennett et al. (2015), and Brogaard et al. (2017)). Second, it adds to the prior literature on the impact of APTS. Third, it finds that while there is a positive relationship between APTS and default risk, institutional ownership and the information environment can mitigate the relationship. The latter findings provide evidence on the importance of corporate

governance to mitigate the effect of APTS. Finally, the study finds that earnings quality is the channel for the negative impact of APTS on default risk. The study thus provides further evidence on the continuing debate on the question of the SEC's policy of continuing to allow auditors to provide tax services.⁵

3.2. Literature Review and Hypotheses Development

A review of the empirical literature on APNAS and, specifically, APTS was provided in Chapter Two and is not repeated here. Section 3.2.1 reviews the literature on default risk and Section 3.2.2 the determinants of default risk. Section 3.2.3 provides the hypotheses development for this study.

3.2.1. Default Risk

In general, default occurs when firms cannot meet their obligations. Merton (1974) argues that a firm's equity reflects the value of its assets where the strike price equals to the face value of companies' debt. In that case, default can happen when the value of equity drops below the face value of debt. As stated above, default (financial distress) disrupt the normal activities of a firm. Significant costs are likely to arise even if the default does not proceed to liquidation. Furthermore, business default, especially by large firms, may harm the economy through outcomes such as reduction of production and employment. Thus, regulators are also affected and understanding of default risk is thus an important issue for investors, regulators and the economy.

One stream of research on default investigates the costs resulting from default. Davydenko et al. (2012) infer the cost of default from the change in the

⁵ See Public Company Accounting Oversight Board, Auditor Independence Tax Services Roundtable. Available at: http://pcaobus.org/Rules/Rulemaking/Docket017/2004-07-14_Roundtable_Transcript.pdf

market value of firms' assets upon default. They argue that investors do not fully anticipate default in their decisions. Consequently, public announcement of default will contain information prompting investors to correct their valuations. The correction, therefore, reflects both the cost of default and the unanticipated news of default. Using data on a sample of 175 U.S. firms that defaulted during 1997 – 2010, the authors find that the mean (median) cost of default is 21.7% (22.1%) of the market value of assets. Furthermore, they find that the cost of default for a distressed bond exchange is 14.7%, while the cost of bankruptcy is 30.5%. They also find that the cost of default for highly levered firms and investment grade firms is 20.2% and 28.8%, respectively.

Glover (2016) argues that estimation of the cost of default using defaulted firms is subject to selection bias. Glover (2016) argues that firms with a higher cost of default tend to choose a lower level of leverage which mitigates default risk. Consequently, defaulted firms are those with a low cost of default. This selection bias thereby underestimates the cost of default that is incurred during the default period. The author proposes a structural model using the costs recognised by firms in setting their leverage and by credit makers in pricing debt. Using data on a sample of 2,505 U.S. firms over the period 1947 – 2010, the author finds that the mean (median) estimated cost of default is 45% (37%) of firm value.

3.2.2. The determinants of default risk

Since the global financial crisis, there has been extensive research on the determinants of firm default risk (for example, Giesecke et al. (2011), Hsu et al. (2015), Bennett et al. (2015), and Brogaard et al. (2017)). Giesecke et al. (2011) examine U.S. bond default risk using data from 1866 – 2008. They find that

default rates may be predicted using stock market returns, changes in stock market volatility, and changes in gross domestic product. Surprisingly, they fail to find predictive power for credit spreads. They also find that the bond market has experienced several clusters of default events. From those events, the worst occurred during the railroad crisis during the years 1873 – 1875. They find that the default rate was more than one-third of the total par value of the corporate bond market during that period. Interestingly, they find that the worst three years of the great depression, 1933 – 1935, only ranks fourth with a total default rate of 12.88%.

Hsu et al. (2015) investigate how innovation, as measured using patent records, is related to default risk and bond pricing. The authors argue that firms with more and higher quality patents have greater capacity to compete in the market. Hence, they are more likely to obtain first mover advantages and assume a market leader role. In addition, patents may increase the entry barriers for newcomers to the business. All these positive factors would improve firms' financial stability, thereby reducing default risk. Using data on 143 corporate bond issues by U.S. firms over the period 1976 – 2006, they find, as predicted, that firms having more and higher impact patents with high generality and originality scores, are less likely to default. In addition, they find that innovative firms have lower yields on their newly issued bonds in the primary market and lower excess bond returns in the secondary market.

Bennett et al. (2015) investigate the relationship between CEO inside debt holdings, default risk, and performance and find that CEO inside debt can serve as an important tool for forecasting bank holding company default. The authors

argue that CEOs who maximize shareholders interest might engage in activities that are unfavorable for other stakeholders such as debt holders and deposit insurers. However, the interest of those other stakeholders might potentially be insured if CEOs are compensated using inside debt. This happens as CEOs are then bound to be more concerned about the firms' long-term solvency and thus engage in investments that are favorable for those other stakeholders. Hence, they believe that firms with higher inside debt compensation for their CEO are less likely to default and perform better during the financial crisis period that began in 2007. Using data on 371 U.S. bank holding companies in 2006Q4, they find that firms with higher CEO inside debt holdings relative to inside equity have lower default risk and better performance during the crisis period. In addition, they find that these bank holding companies gain better ratings on capital strength, earnings power, and risk management. This indicates that banks with higher CEO inside debt have a stronger capital position, better management, stronger earnings, and are in a better position to face market shocks.

Brogaard et al. (2017) examine the influence of stock liquidity on default risk. The authors argue that liquidity can lead to higher default risk if it increases noise trading, resulting in higher mispricing and stock volatility. However, liquidity may also reduce default risk if it enhances price efficiency or improves governance mechanisms of investors through ease of investors to exit. Using data on 7,128 U.S. firms during the period 1994 – 2014, the authors find a negative association between liquidity and default risk and they estimate that a one standard deviation increase in liquidity is associated with a 26.89% decrease in default risk over the sample mean value of default risk. They find that improving

stock price informational efficiency and corporate governance by blockholders are the channels by which liquidity reduces default risk. However, efficiency has the greater explanatory power.

3.2.3. Hypotheses Development

In general, investors rely on the financial information produced by firms. The degree and quality of information is, therefore, a key to investors in monitoring firms and make decisions based on that monitoring (see, for example, Berger and Hann (2003) and Armstrong, Guay, and Weber (2010)). An audit process is expected to provide reassurance that the financial information produced by management is of high quality. The independence of auditors is an important factor in the achievement of that objective. APTS may induce higher information quality if APTS do not impair auditor independence and result in knowledge spillover, thereby APTS may increase the ability of investors to monitor the firms. Consequently, APTS will be associated with a lower default probability. On the other hand, as APTS may lead to economic bonding between auditors and clients, the impairment of auditor independence can lower information quality disclosed in the audited financial statements. This will increase agency costs and reduce the ability of investors to monitor managers' behaviour. As a result, APTS will be associated with the increase of default risk.

Given those two contrasting views regarding the effect of APTS on default risk, this study tests the following hypotheses:

H1(a): *The joint provision of audit and tax services by auditors has a negative association with default risk.*

H1(b): *The joint provision of audit and tax services by auditors has a positive association with default risk.*

A finding that APTS are associated with lower default risk will, on balance, support the knowledge spillover effect, while a finding that APTS are associated with higher default risk will support there being, on balance, a reduction in auditor independence.

3.3. Measures of the key variables, Research Design, and Sample

Section 3.3.1 discusses the measure of the default risk. Section 3.3.2 describes the baseline test model and Section 3.3.3 explains the construction of the sample.

3.3.1. Measure of Default Risk

The tests of the effect of APTS on default risk use the Altman Z-score as the measure of default risk. The Altman Z-score was developed to predict company bankruptcy. Eidleman (1995) argues that the initial Altman Z-score might under-predict certain types of bankruptcy. Altman thus made a correction to the initial form of the Z-score by eliminating the ratio of sales to total assets so as to better capture bankruptcy for non-manufacturing firms. For that reason, this study uses the modified Altman Z-score, *DEFAULT1*, as the primary measure of default risk (Altman, 1983). This study follows Edwards, Schwab, and Shevlin (2016) to calculate the Altman Z-score. The modified Altman Z-score is calculated as follows:

DEFAULT1

$$\begin{aligned} &= 6.56 \times ((\text{Working Capital}) / (\text{Total Assets})) \\ &+ 3.26 \times ((\text{Retained Earnings}) / (\text{Total Assets})) \\ &+ 6.72 \times ((\text{Earnings Before Income Taxes}) / (\text{Total Assets})) \\ &+ 1.05 \times ((\text{Market Value of Equity}) \\ &/ (\text{Book Value of Debt})) \end{aligned} \quad (3.1)$$

Appendix 1 provides a restatement of the component inputs as Compustat data items.

The measure decreases with increasing default risk and, therefore, for ease of interpretation of the results, the outcome of the calculation of equation (3.1) is multiplied by -1.

3.3.2. Research Design

The following cross-sectional regression model is used to test H1(a) and H1(b) regarding the relationship between APTS and default risk:

$$DEFAULT1_{j,t} = \alpha + \beta_1 TAXFEES_{j,t-1} + \beta_2 CONTROLS_{j,t-1} + e_{j,t} \quad (3.2)$$

where, TAXFEES is the measure of APTS, calculated as tax fees paid (in thousand) scaled by the square root of total assets as in Krishnan and Visvanathan (2011). As bigger firms are more likely to pay higher tax fees, deflating tax fees with total assets mitigates the possibility that the result generated from estimating equation (3.2) is just a reflection of the size effect. For example, bigger firms may have lower default risk compared to smaller firms. A finding of a significant negative (positive) value for β_1 would provide support for H1(a) (H1(b)). *Controls* is a vector of control variables.

Following Bharath and Shumway (2008), this study uses the following variables as control variables: *LNEQUITY*, the natural log of market value of equity at the end of the year as measured by share price at the end of year multiplied by total outstanding shares to control for the possibility that firms with high market value of equity are more capable of covering up obligations and thereby less likely to default; *LNDEBT*, the natural log of the face value of debt at the end of the year as measured by the sum of debt in current liabilities and one-half of long term debt, to mitigate the possibility that firms with higher debt are more likely to default as they are more likely to fail to meet their obligations; *INNVOL* the inverse of the annualized stock return volatility to control for the effect of stock volatility on default risk; *NITA* indicates profitability as measured by the ratio of net income to total assets to mitigate the effect that more profitable firms are more likely to have lower default risk; and *EXRET*, the annual excess return as measured by the difference between company stock return and CRSP value-weighted return to control for the effect of firms' market performance.

In addition, this study follows Hsu et al. (2015) to include market-to-book value, *MTB*, to control for the effect of asset valuation on default risk; *LOSS*, to capture the effect of default caused by loss; and *QUOTED*, a measure of liquidity as Brogaard et al. (2017) find that liquidity is related to default risk. For the control variables, based on the extant literature and a priori reasoning, firms with higher *LNEQUITY*, *INNVOL*, *NITA*, *MTB*, and *EXRET* are expected to have lower default risk, while firms with higher *LNDEBT* or experience loss, *LOSS*, are expected to have higher default risk.

All continuous variables are winsorized at the 1st and 99th percentiles to account for outliers. The dependent variable is measured at year t and the regressor variables at year $t-1$. Using this specification mitigates the possibility of reverse causality relationship in which a defaulting firm may reduce their spending on tax consultant expense. Industry dummy variables based on the two-digit SIC code, as well as year dummy variables are used, to control for the impact of industry and year effects on default risk. Appendix 1 provides detailed definitions of the measures of all the variables used in the study

3.3.3. Sample

At first, this study identifies all the listed companies for the period 2003 - 2016 for which there was data available in the Compustat database to calculate the measure of default risk, *DEFAULT1*, and the control variables. This data was then merged with audit fees information available in the Audit Analytics database. The sample starts in year 2003 as APTS are measured in year $t-1$ and tax fees disclosures were limited prior to 2002. Data on analyst following and institutional ownership is obtained from I/B/E/S and Thomson Reuters databases, respectively. Data on all the other variables are sourced from the CRSP database.

Table 3. 1. Sample Selection – APTS and Default Risk

Criteria	Firms	Firm-Year
Firms with available information on audit fees during 2003 – 2016 period, with total assets at least \$1 million, and with positive sales	15,049	109,418
Less regulated firms (SIC 6000 – 6999)	9,424	68,347
Less firms with missing necessary data to calculate measures used to test the hypotheses and firms with zero tax fees.	3,771	21,364

Observations with total assets less than \$1 million and observations with negative sales are excluded (Fernandes and Ferreira, 2009). Following Brogaard et al. (2017), observations on regulated financial firms (those with standard industrial classification (SIC) codes between 6000 – 6999) are excluded as these firms have different capital structure and are subject to various operating and reporting regulations. Observations with missing values are also deleted. Finally, to mitigate the possibility that firms have zero tax fees due to hiring tax specialists other than their auditors, observations with zero APTS fees are deleted. In other words, this study examines the influence of APTS on default risk conditional on firms purchasing tax services from their auditors. Application of these classification steps resulted in a final sample of 21,364 firm-year observations for the primary test. The sample selection process is shown in Table 3.1.

3.4. Empirical results: Auditor Provided Tax Services and Default Risk

This section presents the findings on the influence of APTS on default risk. Section 3.4.1 presents the descriptive statistics for the sample including the pairwise correlations among the test variables. The baseline results are reported in Section 3.4.2. Section 3.4.3 reports and discusses the results after addressing potential endogeneity. Section 3.4.4 presents the results from excluding the global financial crisis period. Section 3.4.5 shows the relationship between APTS and default risk by using alternative measures of default risk to mitigate the possibility of measurement bias.

3.4.1. Descriptive Statistics

Panel A, B, and C in Table 3.2 show the descriptive statistics for the sample. Panel A presents the descriptive statistics for the primary variables. Panel B

presents the descriptive statistics for the control variables used in the main test.

Panel C presents the descriptive statistics for the other variables, used in the endogeneity and robustness tests.

Table 3. 2. Descriptive Statistics - APTS and Default Risk

This table reports the descriptive statistics for the sample of 21,364 firm-year observations for the period 2003 - 2016. The Appendix 1 provides a detailed description of the variables.

Variable	N	Mean	Median	STD	Min	P25	P75	Max
<i>Panel A : Dependent Variables</i>								
DEFAULT1	21,364	-3.470	-3.855	8.332	-27.71	-6.723	-1.408	40.29
TAXFEES	21,364	8.494	5.054	9.987	0.087	1.850	11.21	53.47
ATS	21,364	0.504	1.000	0.500	0.000	0.000	1.000	1.000
DEFAULT2	21,364	-2.725	-2.776	3.932	-15.45	-4.317	-1.420	16.11
EDF	21,364	0.041	0.000	0.150	0.000	0.000	0.000	0.912
RAJGOPALSQ	20,880	0.006	0.001	0.015	0.000	0.000	0.005	0.105
<i>Panel B : Independent and main control variables</i>								
INSTOWN	21,364	0.421	0.406	0.282	0.000	0.183	0.670	0.947
DEDOWN	21,364	0.031	0.010	0.049	0.000	0.000	0.041	0.269
ANALYSTS	21,364	5.266	3.500	5.608	0.000	0.750	7.917	25.17
PIN	13,308	0.169	0.140	0.100	0.022	0.097	0.219	0.500
EQUITY	21,364	5,277	801.3	14,780	6.196	172.4	3,111	106,292
DEBT	21,364	760.4	107.8	1,880	0.000	11.89	518.0	12,284
N/TA	21,364	-0.018	0.035	0.204	-1.156	-0.017	0.072	0.237
σ_E (VOLATILITY)	21,364	0.434	0.362	0.273	0.103	0.247	0.540	1.609
EXRET	21,364	0.056	-0.015	0.495	-0.783	-0.222	0.221	2.425
MTB	21,364	1.852	1.480	1.173	0.642	1.154	2.092	7.637
QUOTED	21,364	0.007	0.002	0.013	0.000	0.001	0.007	0.076
AMIHUD	21,364	0.094	0.000	0.413	0.000	0.000	0.006	3.230
ZERO	21,364	0.028	0.016	0.033	0.000	0.008	0.036	0.163
LOSS	21,364	0.295	0.000	0.456	0.000	0.000	1.000	1.000
<i>Panel C : Other Control Variables</i>								
MERGER	21,364	0.436	0.000	0.496	0.000	0.000	1.000	1.000
NOL	21,364	0.541	1.000	0.498	0.000	0.000	1.000	1.000
CAPINT	21,364	0.303	0.216	0.263	0.011	0.103	0.433	1.192
AUDINDEP	21,364	0.135	0.057	0.220	0.000	0.009	0.153	1.334
AUDTENURE	21,364	10.97	8.000	8.998	1.000	4.000	15.00	39.00
LEVERAGE	21,364	0.551	0.227	1.035	0.000	0.078	0.553	7.176
AUDFEES	21,364	13.94	14.00	1.285	11.04	13.06	14.83	16.95
AUDCHANGE	21,364	0.062	0.000	0.241	0.000	0.000	0.000	1.000
LNTA	21,364	6.714	6.777	2.048	2.199	5.298	8.128	11.39
TA	21,364	4,969	877.4	12,501	9.017	200.0	3,386	88,182
GROWTH	21,364	0.106	0.047	0.323	-0.480	-0.035	0.151	1.804

The mean (median) value of *DEFAULT1* is -3.470 (-3.855); the mean (median) value of *EQUITY* is 5,277 (801.3); the mean (median) value of *DEBT* is 760.4 (107.8); the mean (median) value of *EXRET* is 5.6% (-1.5%); the mean (median) of σ_E is 0.434 (0.362); the mean (median) value of the natural logarithm of audit fees, *AUDFEES*, is 13.94 (14.00); the mean (median) value of profitability, *N/TA*, is -1.8% (3.5%); the mean (median) value of leverage, *LEVERAGE*, is 55.1% (22.7%); the mean (median) value of assets growth, *GROWTH*, is 10.6% (4.7%); and the mean (median) value of total assets, *TA*, is 4,969 (877.4). Appendix 3 provides the Pearson correlation matrix for all of the variables used in the study. The pairwise correlations are broadly consistent with expectations but individual values are of limited significance as the association of *APTS* with default risk is tested in a multivariate context. Importantly, the correlations are not indicative of multicollinearity being a problem for estimation of the test model.

3.4.2. Baseline Results

Equation (3.2) is estimated using the full sample and the baseline regression results are reported in Table 3.3. Column 1 shows the result of including only the control variables as in Bharath and Shumway (2008) and Brogaard et al. (2017) and a similar result is found. The results show that default risk as measured by *DEFAULT1* decreases with higher *LNEQUITY*, *INNVOL*, *N/TA*, and *EXRET*. As expected, default risk increases with higher value of *LNDEBT*. For those variables, the significance levels are at 1% except for *INNVOL* and *EXRET* which are significant at 5% and 10%, respectively.

Column 2 shows the result when the additional control variable, *QUOTED* is included, which increases with illiquidity. The result is similar to that in Brogaard et al. (2017). Specifically, *LNDEBT* and *QUOTED* are significantly and positively related to *DEFAULTI* which mean that default risk increase with increased debt and illiquidity. Both of those variables are significant at 1% level. Default risk as measured by *DEFAULTI* decreases with higher *LNEQUITY*, *INNVOL*, and *NITA* at 1% significance level. The coefficient on *EXRET* is negative and significant at 5% level which indicates that higher excess return results in lower default risk.

Column 3 shows the result when the test variable, *TAXFEES* is included in the estimation of equation (3.2). The result shows that *TAXFEES* is positively related to *DEFAULTI*. This indicates that firms with higher APTS have higher default risk. For the control variables, default risk decreases with higher *LNEQUITY*, *INNVOL*, *EXRET*, and *NITA*. As expected, default risk is higher for firms with higher *LNDEBT* and *QUOTED*.

Column 4 of Table 3.3 shows the fully specified model with all the control variables included in the estimation model. *TAXFEES* is positively related to *DEFAULTI*. For control variables, as expected, the coefficients of *LNEQUITY*, *NITA*, *MTB*, and *INNVOL* are negative and significantly related to *DEFAULTI* which indicates that firms with higher equity, higher profitability, higher market-to-book-ratio, and higher inverse stock return volatility have lower default risk. The estimated coefficients on *LNDEBT* and *QUOTED* are significantly positive which show that firms with higher debt and illiquidity have higher default probability. However, there is no significant effect for *EXRET* and *LOSS*. Overall, these results for the control variables are similar to the results found in prior

research on default risk (see, for example, Bharath and Shumway (2008) and Brogaard et al. (2017)).

Table 3.3. Baseline Result – APTS and Default Risk

This table shows the regression result on the impact of auditor provided tax services on default risk. Column 1 shows the result when only the control variables are included, as in Bharath and Shumway (2008) and Brogaard et al. (2017). Column 2 presents the result when the liquidity measure, *QUOTED*, is included in the regression equation. Column 3 shows the result when *TAXFEES* is included in the regression equation. Column 4 shows the result when *TAXFEES* and all the control variables are included in the regression equation. Continuous variables are winsorized at the 1 and 99 percent levels. The p-values are shown in brackets. Standard errors are clustered at the firm and year level. Appendix 1 provides definitions of all the variables. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULT_t</i>			
	Column 1	Column 2	Column 3	Column 4
<i>TAXFEES_{t-1}</i>			0.029*** (0.000)	0.028*** (0.000)
<i>LNEQUITY_{t-1}</i>	-1.669*** (0.000)	-1.454*** (0.000)	-1.474*** (0.000)	-1.205*** (0.000)
<i>LNDEBT_{t-1}</i>	1.433*** (0.000)	1.398*** (0.000)	1.391*** (0.000)	1.211*** (0.000)
<i>INVVOL_{t-1}</i>	-0.094** (0.014)	-0.134*** (0.001)	-0.132*** (0.001)	-0.176*** (0.000)
<i>N/TA_{t-1}</i>	-20.65*** (0.000)	-20.47*** (0.000)	-20.46*** (0.000)	-22.08*** (0.000)
<i>EXRET_{t-1}</i>	-0.288* (0.095)	-0.388** (0.015)	-0.372** (0.020)	-0.088 (0.383)
<i>QUOTED_{t-1}</i>		45.02*** (0.000)	44.60*** (0.000)	48.45*** (0.000)
<i>MTB_{t-1}</i>				-0.656*** (0.000)
<i>LOSS_{t-1}</i>				-0.442 (0.118)
<i>Constant</i>	-4.650** (0.038)	-6.509*** (0.004)	-6.747*** (0.003)	-6.438*** (0.004)
<i>Year Fixed-Effect</i>	Yes	Yes	Yes	Yes
<i>Industry Fixed-Effect</i>	Yes	Yes	Yes	Yes
R-square	0.4300	0.4324	0.4334	0.4386
Adj. R-square	0.4280	0.4303	0.4314	0.4365
N	21,364	21,364	21,364	21,364

The results reported in Table 3.3 provide support for H1(b) that APTS induce higher default risk. This supports the argument that APTS impair auditor

independence, thereby leading to lower audit quality and higher default probability.

3.4.3. Potential Endogeneity

Previous studies find that a firm's decision to purchase tax services from their incumbent auditors is an intentional decision and driven by several factors (see, for example, Omer et al. (2006), Lassila et al. (2010), McGuire et al. (2012), Krishnan and Visvanathan (2011), Krishnan et al. (2013), and Gleason et al. (2018)). This study addresses that potential endogeneity problem by estimating a two-stage model (Heckman, 1979). First, the following probit regression model is estimated:

$$\begin{aligned}
& Prob(ATS_{j,t-1}) \\
& = \alpha + \beta_1 MERGER_{j,t-1} + \beta_2 NOL_{j,t-1} \\
& + \beta_3 CAPINT_{j,t-1} + \beta_4 INSTOWN_{j,t-1} \\
& + \beta_5 AUDINDEP_{j,t-1} + \beta_6 AUDTENURE_{j,t-1} \\
& + \beta_7 LEVERAGE_{j,t-1} + \beta_8 AUDFEES_{j,t-1} \\
& + \beta_9 AUDCHANGE_{j,t-1} + \beta_{10} LNEQUITY_{j,t-1} \\
& + \beta_{11} LNDEBT_{j,t-1} + \beta_{12} INVVOL_{j,t-1} \\
& + \beta_{13} \frac{NI}{TA}_{j,t-1} + \beta_{14} EXRET_{j,t-1} + \beta_{15} MTB_{j,t-1} + \beta_{16} QUOTED_{j,t-1} \\
& + \beta_{17} LOSS_{j,t-1} + \beta_{18} INDUSTRYDUMMY + \beta_{19} YEARDUMMY \\
& + e_{j,t-1}
\end{aligned} \tag{3.3}$$

Similar to Gleason et al. (2018), *ATS* is an indicator variable equal to one if firm's auditor tax fee is above the yearly median of sample firms and 0 otherwise. Following previous studies McGuire et al. (2012) and Gleason et al. (2018) several exclusionary variables are included: *MERGER*, an indicator variable coded one if there is a merger activity; *NOL*, a dummy variable coded one if there is a tax loss carry forward; *CAPINT*, the ratio of net property, plant, and equipment on total assets in previous year; *INSTOWN*, the average of institutional

ownership during the year; *AUDINDEP*, the ratio of non-audit fees on audit fees; *AUDTENURE*, number of years the auditor has served the companies; *LEVERAGE*, sum of the book value of short-term and long-term debt deflated by the book value of equity; *AUDFEES*, natural logarithm of audit fees; *AUDCHANGE*, a dummy variable equal to one if the firm change the auditor from the prior year. The control variables included in equation (3.2) are also included. The resulting inverse Mills ratio, *INVERSEMILLS*, is then included as an additional variable in estimation of equation (3.2). This study uses the average of institutional ownership instead of the percentage of institutional ownership at the beginning year as in Gleason et al. (2018), because of the possibility that the decision to purchase tax services from the incumbent auditor can occur during the year. Appendix 1 provides detailed definitions for the measures of all the variables used in the study.

The results from estimating equation (3.3) are reported in Table 3.4. Column 1 shows the result when only exclusionary variables are included. The results show that the decision to purchase tax services from auditors, *ATS*, is positively related to *MERGER*, *INSTOWN*, *AUDINDEP*, *AUDFEES*, and *AUDTENURE*, while it is negatively related to, *LEVERAGE*, and *AUDCHANGE*. Column 2 shows the result of estimating equation (3.3) by including all exclusionary variables and the control variables included in estimation of equation (3.2). The probability of purchasing tax services from auditors, *ATS*, is positively related to *AUDINDEP*, *AUDTENURE*, *LEVERAGE*, *AUDFEES*, *LNEQUITY*, and *NITA*. It is negatively related to *CAPINT*, *AUDCHANGE*, *MTB*, *QUOTED*, and *LOSS*. In general, the findings for the explanatory variables are similar to those reported in

Table 3. 4. First-Stage Model – APTS and Default Risk

This table shows the regression result of the first stage regression (equation 3.3). Continuous variables are winsorized at the 1 and 99 percent levels. The p-values are shown in brackets. Appendix 1 provides definitions of variables. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>ATS</i>	
	Column 1	Column 2
<i>MERGER</i> _{<i>t-1</i>}	0.059*** (0.006)	0.008 (0.704)
<i>NOL</i> _{<i>t-1</i>}	-0.010 (0.653)	0.033 (0.127)
<i>CAPINT</i> _{<i>t-1</i>}	-0.043 (0.440)	-0.235*** (0.000)
<i>INSTOWN</i> _{<i>t-1</i>}	0.327*** (0.000)	0.056 (0.289)
<i>AUDINDEP</i> _{<i>t-1</i>}	0.485*** (0.000)	0.374*** (0.000)
<i>AUDTENURE</i> _{<i>t-1</i>}	0.009*** (0.000)	0.007*** (0.000)
<i>LEVERAGE</i> _{<i>t-1</i>}	-0.018* (0.065)	0.053*** (0.000)
<i>AUDFEES</i> _{<i>t-1</i>}	0.721*** (0.000)	0.547*** (0.000)
<i>AUDCHANGE</i> _{<i>t-1</i>}	-0.094** (0.034)	-0.097** (0.031)
<i>LNEQUITY</i> _{<i>t-1</i>}		0.098*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}		0.006 (0.520)
<i>INNVOL</i> _{<i>t-1</i>}		-0.006 (0.436)
<i>NI/TA</i> _{<i>t-1</i>}		0.380*** (0.000)
<i>EXRET</i> _{<i>t-1</i>}		-0.021 (0.363)
<i>MTB</i> _{<i>t-1</i>}		-0.067*** (0.000)
<i>QUOTED</i> _{<i>t-1</i>}		-9.944*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}		-0.071** (0.021)
Constant	-9.129*** (0.000)	-7.036*** (0.000)
Area under ROC Curve	0.8251	0.8301
Year Fixed-Effect	Yes	Yes
Industry Fixed-Effect	Yes	Yes
Pseudo R-square	0.2668	0.2768
N	21,364	21,364

previous studies (see, for example, McGuire et al. (2012) and Gleason et al. (2018)). The selection score for the full model is 0.8301 which suggest that the selection model has excellent discriminatory power.

This study then generates the inverse Mills ratio, *INVERSEMILLS*, from the result presented in Column 2 of Table 3.4 to re-estimate equation (3.2). The result is reported in Table 3.5. The results are qualitatively similar to the baseline result.

Table 3. 5. Endogeneity – APTS and Default Risk

This table shows the regression result on the impact of auditor provided tax services on default risk after addressing endogeneity issue. Continuous variables are winsorized at the 1 and 99 percent levels. The p-values are shown in brackets. Standard errors are clustered at the firm and year level. Appendix 1 provides definitions of variables. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULTI</i>
<i>TAXFEES</i> _{<i>t-1</i>}	0.024*** (0.000)
<i>LNEQUITY</i> _{<i>t-1</i>}	-1.396*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}	1.148*** (0.000)
<i>INVVOL</i> _{<i>t-1</i>}	-0.151*** (0.000)
<i>NITA</i> _{<i>t-1</i>}	-22.35*** (0.000)
<i>EXRET</i> _{<i>t-1</i>}	-0.054 (0.566)
<i>QUOTED</i> _{<i>t-1</i>}	61.59*** (0.000)
<i>MTB</i> _{<i>t-1</i>}	-0.541*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}	-0.489* (0.079)
<i>IINVERSEMILLS</i> _{<i>t-1</i>}	-1.079*** (0.007)
<i>Constant</i>	-4.722** (0.044)
<i>Year Fixed-Effect</i>	Yes
<i>Industry Fixed-Effect</i>	Yes
R-square	0.4394
Adj. R-square	0.4373
N	21,364

In particular, the relationship between *TAXFEES* and *DEFAULTI* remains positive which is consistent with APTS impairing auditor independence thereby

lowering the audit quality and increasing default probability. The coefficients on the control variables show that default risk is higher for firms with a higher face value of debt (*LNDEBT*) and higher stock illiquidity (*QUOTED*), but decreases with higher market capitalization (*LNEQUITY*), higher market-to-book ratio (*MTB*), higher annualized inverse stock return volatility (*INVVOL*), and higher profitability (*NI/TA*). The result that firms experiencing loss in year t-1 appear to have lower default risk in year t is difficult to explain.

3.4.4. Robustness Checks: Global Financial Crisis

Given that the sample period includes the global financial crisis during which there would have been a higher risk of default, this study tests for the possible effect of this on the relationship between APTS and default risk by re-estimating the test model, equation (3.2), and excluding observations from the crisis period, 2008-2009. The results are reported in Table 3.6. The relationship between *TAXFEES* and *DEFAULT1* is positive and significant at 1% level. This result provides evidence which indicates that the positive impact of APTS on default risk is not driven by the inclusion of observations from the global financial crisis.

Table 3. 6. Global Financial Crisis – APTS and Default Risk

This table shows the regression result on the influence of auditor provided tax services on default risk when observations from the crisis period, 2008 -2009 are excluded. Continuous variables are winsorized at the 1 and 99 percent levels. Appendix 1 provides definitions of all variables. Standard errors are clustered at firm and year level. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULT1</i>
<i>TAXFEES</i> _{<i>t-1</i>}	0.028*** (0.000)
<i>LNEQUITY</i> _{<i>t-1</i>}	-1.258*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}	1.267*** (0.000)
<i>INVVOL</i> _{<i>t-1</i>}	-0.154*** (0.000)
<i>NI/TA</i> _{<i>t-1</i>}	-22.33*** (0.000)
<i>EXRET</i> _{<i>t-1</i>}	-0.081 (0.478)
<i>QUOTED</i> _{<i>t-1</i>}	45.59*** (0.000)
<i>MTB</i> _{<i>t-1</i>}	-0.726*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}	-0.498* (0.083)
<i>Constant</i>	-5.840*** (0.004)
<i>Year Fixed-Effect</i>	Yes
<i>Industry Fixed-Effect</i>	Yes
R-square	0.4361
Adj. R-square	0.4337
N	18,346

3.4.5. Robustness Checks: Alternative Measures of Default Risk

To test the robustness of the results reported above to choice of measure for default risk, equation (3.2) is re-estimated using two other measures of default risk. First, this study uses the initial Altman Z-score, *DEFAULT2*, (Altman, 1968) calculated as follows (and, as with *DEFAULT1*, this study multiplies the outcome of the calculation of equation (3.4) by -1):

$$\begin{aligned}
DEFAULT2 = & 1.2 \times ((Working\ Capital) / (Total\ Assets)) \\
& + 1.4 \times ((Retained\ Earnings) / (Total\ Assets)) \\
& + 3.3 \times ((Earnings\ Before\ Income\ Taxes) / (Total\ Assets)) \\
& + 0.6 \times (Market\ Value\ of\ Equity / Book\ Value\ of\ Debt) \\
& + 1 \times ((Sales) / (Total\ Assets)) \quad (3.4)
\end{aligned}$$

In Appendix 1, this study restates the component inputs as Compustat data items.

Second, this study measures default risk by the expected default frequency, *EDF*, developed in Bharath and Shumway (2008) which is a simplified version of the Merton (1974) distance-to-default measure. The distance-to-default measure is based on the Merton (1974) view of equity as a call option on the value of the firm with a strike price equal to the face value of the debt and thus default occurs when the value of the assets falls below the face value of the debt. The distance-to-default measure is widely used (Basel Committee on Banking Supervision, 1999 and Vassalou and Xing, 2004). The *EDF* measure retains the Merton models' structural form and some basic inputs but simplifies the calculation. Bharath and Shumway (2008) show that it performs better than the distance-to-default measure in out-of-sample forecasts of default.

Following Bharath and Shumway (2008) and Brogaard et al. (2017), *EDF* is calculated as follows;

$$\begin{aligned}
DD_{j,t} = & \frac{\text{Log} \left(\frac{Equity_{j,t} + Debt_{j,t}}{Debt_{j,t}} \right) + \left(r_{j,t-1} - \frac{\sigma_{vj,t}^2}{2} \right) \times T_{j,t}}{\sigma_{vj,t} \times \sqrt{T_{j,t}}} \\
\sigma_{vj,t} = & \frac{Equity_{j,t}}{Equity_{j,t} + Debt_{j,t}} \times \sigma_{Ej,t} + \frac{Debt_{j,t}}{Equity_{j,t} + Debt_{j,t}} \times (0.05 \\
& + 0.25 \times \sigma_{Ej,t})
\end{aligned}$$

$$EDF_{j,t} = N(-DD_{j,t})$$

where. $Equity_{j,t}$ refers to the number of shares outstanding multiplied by the stock price of firm j at the end of year t ; $Debt_{j,t}$ is the sum of current liabilities and one-half of long-term debt of firm j at the end of year t ; $r_{j,t-1}$ is firm j 's past annual return, calculated from monthly stock returns over year $t-1$; $\sigma_{Ej,t}$ refers to the stock return volatility of firm j during year t , estimated using the monthly stock return from year $t-1$ and $\sigma_{vj,t}$ is an approximation to the firm's assets volatility in year t ; $T_{j,t}$ refers to the time frame, which is set to one year; and $N(.)$ is the cumulative standard normal distribution function.⁶

Table 3.7 shows the results of re-estimation of the test model using *DEFAULT2* and *EDF* as alternative measure of default risk. Consistent with the baseline result, *TAXFEES* is positively related to *DEFAULT2*, and significant at 1% which indicates that firms with higher APTS have higher default risk. Furthermore, the relationship between *TAXFEES* and *EDF* is positive and significant at the 5% level. Similarly, this indicates that higher APTS lead to a higher default risk. Thus, using alternative measures of default risk, the result remains that APTS lead to higher default risk.

⁶ Since the tax fee is annual data, this study uses annual data to calculate $Debt_{j,t}$.

Table 3. 7. Alternative Measures of Default Risk – APTS and Default Risk

This table presents the regression results on the influence of auditor provided tax services on default risk using two alternative measures of default risk. Specifically, Column 1 shows the results using the initial Altman Z-score (*DEFAULT2*) as the measure of default risk and Column 2 shows the result when using the expected default frequency, *EDF*, as the measure of default risk. Continuous variables are winsorized at the 1 and 99 percent levels. Standard errors are clustered at the firm and year level. Appendix 1 provides definitions of all variables. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULT2</i>	<i>EDF</i>
<i>TAXFEES</i> _{<i>t-1</i>}	0.009*** (0.005)	0.001** (0.024)
<i>LNEQUITY</i> _{<i>t-1</i>}	-0.530*** (0.000)	-0.036*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}	0.590*** (0.000)	0.032*** (0.000)
<i>INVVOL</i> _{<i>t-1</i>}	-0.084*** (0.000)	-0.012*** (0.000)
<i>NITA</i> _{<i>t-1</i>}	-10.21*** (0.000)	0.008 (0.604)
<i>EXRET</i> _{<i>t-1</i>}	-0.024 (0.616)	-0.068*** (0.000)
<i>QUOTED</i> _{<i>t-1</i>}	12.07*** (0.007)	0.453 (0.107)
<i>MTB</i> _{<i>t-1</i>}	-0.488*** (0.000)	0.015*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}	-0.127 (0.287)	0.037*** (0.000)
<i>Constant</i>	-3.774*** (0.002)	0.114*** (0.000)
<i>Industry Fixed-Effect</i>	Yes	Yes
<i>Year Fixed-Effect</i>	Yes	Yes
R-square	0.4423	0.3082
Adj. R-square	0.4402	0.3056
N	21,364	21,364

3.5. Institutional Ownership, Auditor Provided Tax Services, and Default Risk

Brogaard et al. (2017) argue that good corporate governance induces managers to invest in value-enhancing activities and mitigates the tendency to opportunistic behaviour by managers, thereby it may lead to lower default risk. If the positive relationship between APTS and default risk is due to the impairment of auditor independence, better corporate governance may mitigate the negative

outcome of APTS. To test this conjecture, this study tests the impact of APTS on default risk including the influence of institutional ownership. This study focuses on institutional investors given their important role as external monitors of firms (Hartzell and Starks, 2003). In addition, this study also considers dedicated institutions since they are long term shareholders who play a special monitoring role (Chen et al., 2007).

Test of the impact of institutional ownership on the relationship between APTS and default risk uses two measures of institutional ownership that are well established in the governance literature, viz, institutional ownership, *INSTOWN*, (Hartzell and Starks, 2003), and dedicated institutional ownership, *DEDOWN*, (Chen et al., 2007). Data from the Thomson Reuters Institutional Holdings (13F) database is used to calculate these two measures. *INSTOWN* is calculated as the average of the percentages of shares outstanding held by institutional investors over the four quarters of the firm's fiscal year. Following Bushee (1998), *DEDOWN* is calculated as the yearly percentages of shares outstanding held by dedicated institutional investors, taking the average over the four quarters of the firm's fiscal year.

The sample is divided into those observations having a higher institutional ownership in year $t-1$ above the yearly median value of the measure used (*HINSTOWN*) and those having a lower institutional ownership in year $t-1$ below or the same as the yearly median value (*LINSTOWN*). A similar high/low dedicated institutional ownership classification is used for the *DEDOWN* variable, where *HDEDOWN* (*LDEDOWN*) refers to high (low) dedicated institutional holdings. The *TAXFEES* variable is then interacted with these dummy variables,

measuring high and low institutional holdings separately, and including both interaction terms in the regression. The results are reported in Table 3.8.

Table 3. 8. Institutional Ownership - APTS and Default Risk

This table reports the results on how the relationship between auditor provided tax services and default risk varies between high and low institutional ownership. This study uses two measures of institutional ownership: *INSTOWN* and *DEDOWN*. For each fiscal year in the sample period, firms are sorted into two groups based on the median value of each of the institutional ownership measures. *TAXFEES* is interacted with the stronger and weaker institutional ownership dummies and these two interaction variables are regressed on the default risk measure. Appendix 1 provides definitions of all the variables. Standard errors are clustered at firm and year level. Continuous variables are winsorized at the 1 and 99 percent levels. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULT1</i>	
	Column 1	Column 2
<i>HINSTOWN</i> x <i>TAXFEES</i> _{<i>t-1</i>}	0.019*** (0.002)	
<i>LINSTOWN</i> x <i>TAXFEES</i> _{<i>t-1</i>}	0.052*** (0.000)	
<i>HDEDOWN</i> x <i>TAXFEES</i> _{<i>t-1</i>}		0.025*** (0.000)
<i>LDEDOWN</i> x <i>TAXFEES</i> _{<i>t-1</i>}		0.039*** (0.000)
<i>LNEQUITY</i> _{<i>t-1</i>}	-1.183*** (0.000)	-1.196*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}	1.213*** (0.000)	1.211*** (0.000)
<i>INNVOL</i> _{<i>t-1</i>}	-0.175*** (0.000)	-0.175*** (0.000)
<i>N/TA</i> _{<i>t-1</i>}	-22.05*** (0.000)	-22.08*** (0.000)
<i>EXRET</i> _{<i>t-1</i>}	-0.104 (0.297)	-0.093 (0.353)
<i>QUOTED</i> _{<i>t-1</i>}	46.77*** (0.000)	48.23*** (0.000)
<i>MTB</i> _{<i>t-1</i>}	-0.663*** (0.000)	-0.659*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}	-0.446 (0.111)	-0.434 (0.121)
Constant	-6.565*** (0.003)	-6.500*** (0.003)
Difference in Coefficient	-0.033***	-0.014
F-values	7.20	2.19
Year Fixed-Effect	Yes	Yes
Industry Fixed-Effect	Yes	Yes
R-square	0.4390	0.4387
Adj. R-square	0.4369	0.4366
N	21,364	21,364

Column 1 of Table 3.8 shows the result for *INSTOWN*. It shows that the estimated coefficient of *TAXFEES* is significantly positive (0.019) at the 1% level for firms that belong to the *HINSTOWN* grouping and also positive (0.052) at the 1% level for firms belonging to the *LINSTOWN* group. However, although both groups have significantly positive relationship between *TAXFEES* and *DEFAULT1*, The coefficient for *LINSTOWN* is more positive than *HINSTOWN* at the 1% level. This supports the argument that stronger governance may mitigate the impairment of auditor independence resulting from APTS.

Column 2 of Table 3.8 reports the result for *DEDOWN*. It shows that the estimated coefficient of *TAXFEES* is significantly positive (0.025) at the 1% level for firms belonging to *HDEDOWN* and also significantly positive (0.039) at the 1% level for firms in the *LDEDOWN* group. The coefficient of *TAXFEES* is higher for the *LDEDOWN* group than the coefficient of *TAXFEES* for *HDEDOWN* group but the difference is not significant. This may be related to the condition that as dedicated institutional investors are those, among all investors, who are likely to provide better governance, the groups may not be significantly different in providing the governance mechanism to firms.

3.6. Information Environment, Auditor Provided Tax Services, and Default Risk

Kim, Krinsky, and Lee (1997) argue that institutional investors are better informed compared to individual investors as their cost unit of gathering information is lower. In addition to their richer information set, institutional investors also have more sophisticated information processing ability (see, for example, Kim and Verrecchia (1994) and Bamber and Cheon (1995)). El-Gazzar

(1998) finds that higher institutional holding is negatively related to the market reaction to an earnings information release. Further, Jiambalvo, Rajgopal, and Venkatachalam (2002) find that the sophistication of institutional investors leads the current stock price to also reflect forward-looking non-earnings information. Hence, the results presented in Section 3.5 may indicate that the information environment play a significant role in the relationship between APTS and default risk. In this section, this study investigates the influence of the information environment on the relationship between APTS and default risk. It is expected that the positive relationship between *TAXFEES* and *DEFAULT1* is stronger for firms with higher information asymmetry.

Previous studies find that analyst coverage is related to the degree of information asymmetry (see, for example, Roulstone (2003), Frankel and Li (2004), and Chang, Dasgupta, and Hilary (2006)). Roulstone (2003) finds that analyst coverage induces higher public information availability, thereby reducing information asymmetry and increasing market liquidity. Prior studies also use the probability of insider trading, PIN, to capture information asymmetry (see, for example, Akins, Ng, and Verdi (2012) and Bhattacharya, Ecker, Olsson, and Schipper (2012)). Further, Subrahmanyam and Titman (2001) show that higher liquidity increases informational price efficiency by triggering the entry of informed traders. Analyst coverage, PIN, and degree of stock liquidity are thus included to investigate the effect of the information environment on the relationship between *TAXFEES* and *DEFAULT1*.

3.6.1. Analyst Coverage and Probability of Informed Trading

Similar to previous studies, Brown and Hillegeist (2007) and Kim, Li, Lu, and Yu (2016), the information environment is measured by using the number of analyst following the stock (*ANALYSTS*) and *PIN* developed by Easley, O'Hara, and Paperman (1998). The analyst coverage measure is calculated using data from the I/B/E/S database. Analyst following (*ANALYSTS*) is calculated as the monthly average of analyst following over a 12 month period for a particular firm. The *PIN* score reflects the probability of an informed trader submitting a certain order and has a positive relationship with the degree of information asymmetry. The annual *PIN* score measure is provided by Brown and Hillegeist (2007).⁷ The positive relationship between *TAXFEES* and *DEFAULTI* is expected to be stronger for firms belonging to the lower analyst coverage (higher *PIN* score) compared to those belonging to the higher analyst coverage (lower *PIN* score).

To test this conjecture, dummy variables are created based on the degree of information asymmetry measures. In each year, firms are divided into those having a stronger information environment and those having a weaker information environment. In the case of analyst following, there are two dummy variables *HANALYSTS* and *LANALYSTS*. *HANALYSTS* is equal to one for those firms having more analyst following than the median analyst following for each year of the sample and zero otherwise. *LANALYSTS* is equal to one for those firms having a lower than or equal to yearly median analyst following. A similar high/low informational environment classification is used for the *PIN* variable,

⁷ Thanks to Stephen Brown for making the *PIN* score publicly available at <http://scholar.rhsmith.umd.edu/sbrown/pin-data>.

where *LPIN* (*HPIN*) refers to a high (low) information environment. *TAXFEES* is then interacted with those dummy variables, measuring high and low information asymmetry separately, and both interaction terms are included in the regression model.

Table 3.9 provides the results for the effect of the information environment. Column 1 of Table 3.9 presents the results for the information environment measured by *ANALYSTS*. For firms in the *HANALYSTS* group, the coefficient is positive (0.014) and significant at 5% level, and for firms in the *LANALYSTS* group the coefficient is also positive (0.057) and is significant at the 1% level. The coefficients are significantly different at 1% level which indicates that the positive relationship between *TAXFEES* and *DEFAULT1* is stronger for firms with higher information asymmetry.

Column 2 of Table 3.9 presents the results for the information environment as measured by *PIN*. The results show a positive coefficient (0.043) at 1% level significance for the relationship between *TAXFEES* and *DEFAULT1* for *HPIN* group and also a positive coefficient (0.020) at 1% level of significance for the relationship between *TAXFEES* and *DEFAULT1* for the *LPIN* group. The coefficient for the *HPIN* group is higher than for the *LPIN* group but the difference is not statistically significant. Overall, the results support the prediction that the positive relationship between *TAXFEES* and *DEFAULT1* is stronger for firms belonging to the lower information environment group than for those that belong to the higher information environment group.

Table 3. 9. Analyst Following and PIN - APTS and Default Risk

This table reports the results on how the relationship between auditor provided tax services and default risk varies in high and low information environments. This study reports on the information asymmetry measures as follows: in columns 1 and 2, analyst following, *ANALYSTS*, and probability of informed trading, *PIN*, respectively. For each fiscal year in the sample period, firms are sorted into two groups based on the median value of each of the information environment measures. *TAXFEES* is interacted with the stronger and weaker information environment dummies and these two interaction variables are regressed on the default risk measure. The sample for *PIN* is restricted to 2003 – 2011 due to availability of the data. Appendix 1 provides definitions of all variables. Standard errors are clustered at firm and year level. Continuous variables are winsorized at the 1 and 99 percent levels. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULTI</i>	
	Column 1	Column 2
<i>HANALYSTS</i> x <i>TAXFEES</i> _{<i>t-1</i>}	0.014** (0.036)	
<i>LANALYSTS</i> x <i>TAXFEES</i> _{<i>t-1</i>}	0.057*** (0.000)	
<i>HPIN</i> x <i>TAXFEES</i> _{<i>t-1</i>}		0.043*** (0.009)
<i>LPIN</i> x <i>TAXFEES</i> _{<i>t-1</i>}		0.020*** (0.005)
<i>LNEQUITY</i> _{<i>t-1</i>}	-1.151*** (0.000)	-1.208*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}	1.215*** (0.000)	1.365*** (0.000)
<i>INVVOL</i> _{<i>t-1</i>}	-0.180*** (0.000)	-0.177*** (0.000)
<i>NITA</i> _{<i>t-1</i>}	-22.06*** (0.000)	-20.37*** (0.000)
<i>EXRET</i> _{<i>t-1</i>}	-0.133 (0.168)	0.008 (0.899)
<i>QUOTED</i> _{<i>t-1</i>}	48.37*** (0.000)	43.45*** (0.000)
<i>MTB</i> _{<i>t-1</i>}	-0.653*** (0.000)	-0.580*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}	-0.429 (0.127)	-0.478 (0.215)
<i>Constant</i>	-6.848*** (0.002)	-7.166*** (0.002)
Difference in Coefficient	-0.043***	0.023
F-values	6.90	1.54
<i>Year Fixed-Effect</i>	Yes	Yes
<i>Industry Fixed-Effect</i>	Yes	Yes
R-square	0.4393	0.4395
Adj. R-square	0.4371	0.4363
N	21,364	13,308

3.6.2. Liquidity

As previous studies find that liquidity is associated with the information environment (see, for example, Welker (1995) and Attig, Fong, Gadhoun, and Lang (2006)), a liquidity measure is also used to capture the quality of the information environment. Three alternative measures are used for illiquidity: (i) the Amihud liquidity measure, *AMIHUD*, (Amihud, 2002), (ii) the quoted spread, *QUOTED*, and (iii) the percentage of zero daily returns, *ZERO* (Lesmond, Ogden, and Trzcinka, 1999). The liquidity measures are calculated using data from the CRSP database. The positive relationship between *TAXFEES* and *DEFAULT1* is expected to be stronger for firms with higher *AMIHUD*, *QUOTED*, and *ZERO* as compared to firms with lower *AMIHUD*, *QUOTED*, and *ZERO*.

As before, all firms in the sample are sorted into two groups based on the median value of the liquidity measures for each year. Specifically, for each of the liquidity measures used, the sample is classified as having low liquidity if *AMIHUD*, *QUOTED*, and *ZERO* are higher than the median value of the particular liquidity measures for each year of the sample and these groups are labeled as *HAMIHUD*, *HQUOTED*, and *HZERO*, respectively. While those having scores lower than or equal to the yearly median value of the respective liquidity measures are labeled as *LAMIHUD*, *LQUOTED*, and *LZERO*. *TAXFEES* is then interacted with the two binary variables for high and low liquidity separately and both interaction terms are included in the regression.

The results for the liquidity measures of the information environment are reported in Table 3.10. Column 1 shows the results for the *AMIHUD* measure. It

Table 3. 10. Liquidity - APTS and Default Risk

This table reports the results on how the relationship between auditor provided tax services and default risk varies in high and low information environments. This study reports on the information asymmetry measures as follows; in columns 1, 2 and 3, Amihud illiquidity, *AMIHUD*, quote spread, *QUOTED*, and percentage of daily zero returns, *ZERO*, respectively. For each fiscal year in the sample period, firms are sorted into two groups based on the median value of each of the information environment measures. *TAXFEES* is interacted with the stronger and weaker information environment dummies and these two interaction variables are regressed on the default risk measure. Appendix 1 provides definitions of all variables. Standard errors are clustered at firm and year level. Continuous variables are winsorized at the 1 and 99 percent levels. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULTI</i>		
	Column 1	Column 2	Column 3
<i>HAMIHUD</i> x <i>TAXFEES</i> _{<i>t-1</i>}	0.047*** (0.004)		
<i>LAMIHUD</i> x <i>TAXFEES</i> _{<i>t-1</i>}	0.022*** (0.000)		
<i>HQUOTED</i> x <i>TAXFEES</i> _{<i>t-1</i>}		0.054*** (0.000)	
<i>LQUOTED</i> x <i>TAXFEES</i> _{<i>t-1</i>}		0.018*** (0.004)	
<i>HZERO</i> x <i>TAXFEES</i> _{<i>t-1</i>}			0.066*** (0.000)
<i>LZERO</i> x <i>TAXFEES</i> _{<i>t-1</i>}			0.013** (0.050)
<i>LNEQUITY</i> _{<i>t-1</i>}	-1.414*** (0.000)	-1.400*** (0.000)	-1.389*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}	1.260*** (0.000)	1.257*** (0.000)	1.254*** (0.000)
<i>INNVOL</i> _{<i>t-1</i>}	-0.129*** (0.000)	-0.124*** (0.000)	-0.136*** (0.000)
<i>N/TA</i> _{<i>t-1</i>}	-22.18*** (0.000)	-22.17*** (0.000)	-22.09*** (0.000)
<i>EXRET</i> _{<i>t-1</i>}	-0.011 (0.916)	-0.020 (0.851)	-0.037 (0.735)
<i>MTB</i> _{<i>t-1</i>}	-0.627*** (0.000)	-0.626*** (0.000)	-0.618*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}	-0.412 (0.138)	-0.435 (0.119)	-0.446 (0.102)
<i>Constant</i>	-4.697** (0.036)	-4.786** (0.033)	-4.734** (0.033)
Difference in Coefficient	0.025	0.036**	0.053***
F-values	2.12	5.70	18.80
<i>Year Fixed-Effect</i>	Yes	Yes	Yes
<i>Industry Fixed-Effect</i>	Yes	Yes	Yes
R-square	0.4359	0.4363	0.4370
Adj. R-square	0.4338	0.4342	0.4349
N	21,364	21,364	21,364

shows that the estimated coefficient of *TAXFEES* is significantly positive (0.047) at 1% level for firms belongs to the *HAMIHUD* group and is also positive (0.022) at the 1% level of significance for firms that belong to the *LAMIHUD* group. However, while the coefficient for the *HAMIHUD* group is higher than the coefficient for the *LAMIHUD* group, the difference is not statistically significant.

Similarly, Column 2 shows that the estimated coefficient of *TAXFEES* is significantly positive (0.054) at the 1% level for firms that belong to the *HQUOTED* group and also positive (0.018) at the 1% level of significance for firms that belong to *LQUOTED*. The magnitude of the estimated coefficient of *TAXFEES* is higher for *HQUOTED* than *LQUOTED* at the 5% level of significance. Column 3 shows that the estimated coefficient of *TAXFEES* is positive (0.066) at the 1% level of significance for firms belonging to the *HZERO* group and is also positive (0.013) at the 5% level of significance for firms in the *LZERO* group. The magnitude of the estimated coefficient of *TAXFEES* is greater for the *HZERO* group than for the *LZERO* group at the 1% level of significance.

The results, overall, show that the positive relationship between *TAXFEES* and *DEFAULT1* is stronger for firms that are characterized as having less information availability, irrespective of how the information environment is measured. Overall, the findings indicate that a firm's information environment plays a significant role in determining the relationship between APTS and default risk.

3.7. Possible Mechanism – Earnings Quality

The finding that APTS lead to higher default risk is consistent with APTS impairing auditor independence, thereby increasing default risk. To provide

evidence on a channel through which APTS may induce higher default risk, this study examines the influence of APTS on earnings quality. If APTS lead to lower audit quality as a consequence of impairment of auditor independence, APTS will be associated with lower earnings quality. This conjecture is tested by firstly estimating the following equation:

$$RAJGOPALSQ_{j,t} = \alpha + \beta_1 TAXFEES_{j,t-1} + \beta_2 Controls_{j,t-1} + \tilde{\epsilon}_{j,t} \quad (3.5)$$

Earnings quality is measured using squared abnormal accruals (*RAJGOPALSQ*), as developed in Rajgopal and Venkatachalam (2011). Higher values of *RAJGOPALSQ* indicate lower earnings quality. *MTB* is included to control for firms with higher asset valuations being more likely to have lower earnings quality, *GROWTH* to mitigate the influence that firms in high growth phase have less scope to manage earnings, *LNTA* to control the effect of bigger firms being less likely to manage earnings, *LEVERAGE* to mitigate the effect that firms with higher debt capital having more incentive to manage earnings in order to meet debt covenants, and *LOSS* to mitigate the effect of experiencing loss.

Table 3.11 shows the result of estimation of equation (3.5). The positive coefficient of 0.001 at 5% level of significance on *TAXFEES* shows that *TAXFEES* is positively related to *RAJGOPALSQ*. For the control variables, as expected, lower earnings quality is related to lower growth, higher asset valuation, smaller firm size, higher leverage, and higher loss experience. Thus APTS are associated with lower earnings quality. This result lends supporting evidence to the baseline result that APTS induce higher default risk due to the impairment of auditor independence.

Table 3. 11. Earnings Quality Channel - APTS and Default Risk

This table reports the relationship between auditor provided tax services, earnings quality, and default risk. It shows the influence of auditor provided tax services on earnings quality. Earnings quality is measured by *RAJGOPALSQ*. Appendix 1 provides definitions of variables. Continuous variables are winsorized at the 1 and 99 percent levels. Standard errors are clustered at firm and year level. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>RAJGOPALSQ</i>
<i>TAXFEES</i> _{<i>t-1</i>}	0.001*** (0.001)
<i>GROWTH</i> _{<i>t-1</i>}	-0.001*** (0.006)
<i>MTB</i> _{<i>t-1</i>}	0.001*** (0.000)
<i>LNTA</i> _{<i>t-1</i>}	-0.002*** (0.000)
<i>LEVERAGE</i> _{<i>t-1</i>}	0.001*** (0.001)
<i>LOSS</i> _{<i>t-1</i>}	0.002*** (0.000)
<i>Constant</i>	0.011*** (0.000)
<i>Year Fixed-Effect</i>	Yes
<i>Industry Fixed-Effect</i>	Yes
R-square	0.0995
Adj. R-square	0.0963
N	20,880

To confirm the earnings quality channel, this study investigates the impact of *RAJGOPALSQ* on *DEFAULT1*. To do so, the following equation is estimated:

$$DEFAULT1_{j,t} = \alpha + \beta_1 RAJGOPALSQ_{j,t} + \beta_2 Controls_{j,t-1} + e_{j,t} \quad (3.6)$$

The results are reported in Table 3.12. It shows that default risk increases when earnings quality declines. Overall, the findings in this section lend support to the hypothesis that APTS increase default risk by impairing auditor independence which is reflected in decreased earnings quality.

Table 3. 12. Earnings Quality Channel - APTS and Default Risk – Confirmatory Tests

This table reports the relationship between auditor provided tax services, earnings quality, and default risk. It shows the influence of earnings quality on default risk. Earnings quality is measured by *RAJGOPALSQ*. Appendix 1 provides definitions of variables. Continuous variables are winsorized at the 1 and 99 percent levels. Standard errors are clustered at firm and year level. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULT1</i>
<i>RAJGOPALSQ_t</i>	57.56*** (0.000)
<i>LNEQUITY_{t-1}</i>	-1.116*** (0.000)
<i>LNDEBT_{t-1}</i>	1.196*** (0.000)
<i>INNVOL_{t-1}</i>	-0.179*** (0.000)
<i>NITA_{t-1}</i>	-21.38*** (0.000)
<i>EXRET_{t-1}</i>	-0.090 (0.399)
<i>QUOTED_{t-1}</i>	42.15*** (0.000)
<i>MTB_{t-1}</i>	-0.732*** (0.000)
<i>LOSS_{t-1}</i>	-0.356 (0.197)
<i>Constant</i>	-6.854*** (0.003)
<i>Year Fixed-Effect</i>	Yes
<i>Industry Fixed-Effect</i>	Yes
R-square	0.4439
Adj. R-square	0.4418
N	20,880

As a robustness check for this earnings quality channel, this study estimates the following equation:

$$\begin{aligned}
 \text{DEFAULT1}_{j,t} = & \alpha + \beta_1 \text{TAXFEES}_{j,t-1} + \beta_2 \text{TAXFEES}_{j,t-1} * \\
 & \text{RAJGOPALSQ}_{j,t} + \beta_3 \text{Controls}_{j,t-1} + \\
 & e_{j,t}
 \end{aligned}
 \tag{3.7}$$

The results are reported in Table 3.13. The positive coefficient of 0.013, at 5% level of significance, on *TAXFEES* shows that *TAXFEES* is positively related

to *DEFAULT1*. The coefficient on the interaction between *TAXFEES* and *RAJGOPALSQ* is also positive (2.967), at 1% level of significance, which shows that earnings quality adds to the impact of *TAXFEES* on *DEFAULT1*.

Table 3. 13. Earnings Quality Channel – APTS and Default Risk – Additional Test

This table reports the relationship between auditor provided tax services, earnings quality, and default risk. Appendix 1 provides definitions of variables. Continuous variables are winsorized at the 1 and 99 percent levels. Standard errors are clustered at firm and year level. The p-values are shown in brackets. *, **, and ***, indicate statistical significance at the 10, 5, and 1 percent level, respectively.

	<i>DEFAULT1</i>
<i>TAXFEES</i> _{<i>t-1</i>}	0.013** (0.044)
<i>RAJGOPALSQ</i> _{<i>t</i>}	36.85*** (0.000)
<i>TAXFEES</i> _{<i>t-1</i>} * <i>RAJGOPALSQ</i> _{<i>t</i>}	2.967*** (0.000)
<i>LNEQUITY</i> _{<i>t-1</i>}	-1.133*** (0.000)
<i>LNDEBT</i> _{<i>t-1</i>}	1.192*** (0.000)
<i>INNVOL</i> _{<i>t-1</i>}	-0.177*** (0.000)
<i>NI/TA</i> _{<i>t-1</i>}	-21.35*** (0.000)
<i>EXRET</i> _{<i>t-1</i>}	-0.078 (0.468)
<i>QUOTED</i> _{<i>t-1</i>}	41.82*** (0.000)
<i>MTB</i> _{<i>t-1</i>}	-0.728*** (0.000)
<i>LOSS</i> _{<i>t-1</i>}	-0.355 (0.203)
<i>Constant</i>	-6.973*** (0.002)
<i>Year Fixed-Effect</i>	Yes
<i>Industry Fixed-Effect</i>	Yes
R-square	0.4454
Adj. R-square	0.4432
N	20,880

3.8. Conclusion

This study finds that APTS have a significant positive relationship with default risk. The results, therefore, support H1(b) that APTS have a positive association with default risk. The result holds after addressing potential

endogeneity and is robust to (i) excluding the global financial crisis period from the dataset and (ii) alternative measures of default risk. The positive relationship between APTS and default risk is stronger for firms with lower institutional holdings. This may provide evidence that stronger corporate governance may mitigate the positive relationship between APTS and default risk. The higher the degree of information asymmetry, as reflected by lower analyst following, higher probability of informed trading, and lower stock liquidity, the stronger is the positive relationship between APTS and default risk. This indicates that a firm's information environment plays a significant role in determining the relationship between APTS and default risk.

Furthermore, this study finds that APTS lead to higher default risk through the deterioration of earnings quality. Specifically, this study finds that APTS are related to lower earnings quality. This, therefore, indicates that APTS lower auditor independence and audit quality, thereby lowering earnings quality and increasing default risk.

CHAPTER FOUR

CONCLUSION TO THE THESIS

This study examines the impact of APTS on capital markets. First, it uses the Dyreng and Markle (2016) income shifting measurement model to examine the impact of APTS on income shifting by U.S. multinational companies. Second, it uses a large broad sample of U.S. firms to investigate the impact of APTS on default risk. This chapter is structured as follows. Section 4.1 presents the summary of the research findings on the impact of APTS. Section 4.2 summarises the contributions from this study. Section 4.3 notes the limitations of the study. Finally, Section 4.4 offers suggestions for future research.

4.1. Summary of Findings

There are contrasting arguments on the influence of APNAS on the work of auditors. APNAS may provide knowledge spillovers which improve the auditor's understanding of the client and thereby increases the quality of the work performed. However, the opponents of APNAS claim that APNAS may impair the independence of auditors, thereby lowering the quality of the work of the auditor. Regulators have been concerned about the possibility that APNAS do impair auditor independence. As a result, SEC banned several, previously allowed, APNAS such as bookkeeping and financial information systems design and implementation but have continued to permit auditors to provide tax services to their clients.

The evidence from empirical studies on APNAS and, specifically, APTS, is mixed. Therefore, for both income shifting and default risk this study proposes

two hypotheses, one that APTS increase the phenomenon of interest, the other that APTS decrease it.

For income shifting, this study tests the hypotheses using a sample of 10,248 firm-year observations on U.S. multinationals over the period 2002 – 2016 and employs the Dyreng and Markle (2016) income shifting measurement model, originally developed to test the impact of financial constraints on income shifting. The test focuses on outbound shifting as estimates of inbound shifting are subject to severe noise. This study finds that APTS reduce outbound income shifting. The result holds after addressing potential endogeneity and is robust to excluding observations from the financial crisis periods. The result also holds when firm specific characteristics are included in the equations for the income shifting parameters.

For default risk, this study tests the hypotheses using a sample of 21,364 firm-year observations on a broad sample of U.S. firms over the period 2003 – 2016. The test model states a simple link from a measure of APTS to a measure of default risk, subject to controls. This study measures APTS by scaled fees for APTS and default risk by the modified Altman Z-score. APTS are found to have a positive relationship with default risk. The result holds after addressing potential endogeneity and is robust to excluding the global financial crisis period and use of alternative measures of default risk (the initial Altman Z-score and the expected default frequency). This study also finds that the positive relationship is stronger with lower institutional holdings. This suggests that stronger corporate governance may mitigate the impact of APTS on default risk. It also finds that the impact of APTS on default risk is stronger with a higher degree of information

asymmetry. Finally, this study finds evidence that earnings quality may be the channel for the influence of APTS on default risk. That is, APTS lower audit quality, thereby lowering earnings quality and increasing default risk. Given the cost of default, this is an important finding.

The examination of the impact of APTS on the two capital markets phenomena indicates that the effects are opposite in direction. Thus, taking the results on income shifting and default risk in combination, the issue of the SEC continuing to permit auditors to provide tax services is left open to question.

One obvious possible reason for the finding of opposite effects is simply that income shifting relates to just a segment of all U.S. firms whereas default risk applies for all U.S. firms. It is not unusual to find in empirical research that a particular effect is different across different populations of firms or across different time periods. It may be that the difference results from differing degrees of importance for audit as a governance mechanism. In the case of income shifting the auditor is probably the only external party with a detailed knowledge of income shifting arrangements and therefore plays a key role in managing the risks associated with entering into such arrangements. Furthermore because of the larger size of multinationals, the auditor may provide a higher level of quality in audit services. For default risk, a number of non-audit governance mechanisms may mitigate the impact of APTS as indicated by the tests on institutional holdings and the information environment.

4.2. Contributions

Section 4.2.1 discusses the contributions generated from examination of the relationship between APTS and income shifting. Section 4.2.2 presents the

contributions resulting from examination of the relationship between APTS and default risk.

4.2.1. Contributions: APTS and Income Shifting

The contributions from the investigation of the influence of APTS on income shifting include the following: First, while large number of earlier studies have investigated APTS and income shifting separately, none has tested, as this study does, the possible link between them. Second, this study presents additional evidence on companies' tax avoidance behaviour. The prior literature shows that tax avoidance by companies is influenced by manager type, firm factors, and country factors. This study extends this line of research by providing evidence on the influence of an additional party, namely the auditor as a tax consultant. Third, this study finds that APTS reduce income shifting. This is an important finding as income shifting is a significant economic issue. The OECD (OECD, 2015) estimates that tax avoidance activities reduce global tax revenue by 4% to 10%, and income shifting is likely to be a leading factor for this result. However, while the finding on APTS appears to be supportive of the SEC's stance, this is tempered by the finding on the impact of APTS on default risk.

4.2.2. Contributions: APTS and Default Risk

By examining the influence of APTS on default risk, this study makes a number of contributions. First, as with the examination of APTS and income shifting, a large number of studies have considered separately APTS and default risk but this is the first study to link them. Second, this study finds that APTS lead to higher default risk for firms with lower institutional holdings and higher information asymmetry. This may indicate the importance of other corporate

governance mechanisms to mitigate the negative effect of APTS on audit quality. Third, this study finds that APTS are associated with lower earnings quality and thus earnings quality may be a channel for the impact of APTS on default risk.

The finding on the impact of APTS on income shifting suggests that APTS improves the auditor's understanding of the client and thereby increases the quality of the work performed. However, the finding on the impact of APTS on default risk suggests that APTS may impair the independence of auditors. Therefore, the issue of the SEC continuing to permit auditors to provide tax services remains an open question.

4.3 Limitations

Section 4.3.1 presents the limitations in the examination of the relationship between APTS and income shifting. Section 4.3.2 presents the limitations in the examination of the relationship between APTS and default risk.

4.3.1. Limitations: APTS and Income Shifting

A key limitation of this study is the data used. Specifically, the study uses publicly available financial statement data. As regards taxation per se this is unlikely to be the same as the data provided in tax returns. Clearly, the latter data are not publicly available. However, a saving factor is that such data is unavailable not just to researchers but also to the market. Thus the study at least uses the same data as that guiding market behaviour. An additional limitation arises from the use of the Dyreng and Markle (2016) income shifting model, which relies on a number of assumptions, the effect of which is inevitably uncertain. Finally, as with all empirical studies, it may suffer from significant omitted variables.

4.3.2. Limitations: APTS and Default Risk

A significant limitation on this study is in the definition and measurement of default risk. The measures used are well established in the literature but serve a wide range of different forms of distress. Several prior studies find that audit committee characteristics influence the impact of APNAS. This study omits consideration of the role of the audit committee in the decision to employ the auditor to provide tax services. As with the study on APTS and income shifting, this study may also suffer from significant omitted variables.

4.4. Future Research

The following issues could benefit from further research. In general, there should be further consideration of the audit as a governance mechanism, in a portfolio of governance mechanisms, and therefore the degree of impact of the other mechanisms on the consequence of extending the role of auditor to include tax advice. This is a vast area for research but in the case of default risk, this study has considered the relationship with one such mechanism, viz, institutional holdings. Particular issues to be investigated include the characteristics of the audit committee in selecting between the auditor and other parties for providing tax advice, and whether the tax services are recurring or non-recurring.

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APPENDIX 1 – DEFINITION OF VARIABLES

Variable Name Definitions

Key Dependent Variable

DEFAULT1 Modified Altman Z-score (Altman, 1983). Altman Z-Score formula is calculated as in Edwards et al. (2016). The formula stated in page 67, restated in term of Compustat data items, is as follows:

$$6.72*((PI + XINT)/AT) + 6.56 *(WCAP/AT) + 3.26*(RE/AT) + 1.05*((CHSO*PRCC_F)/LT).$$

DEFAULT2 Original Altman Z-score (Altman, 1968). Altman Z-Score formula is calculated as in Edwards et al. (2016). The formula stated in page 81, restated in term of Compustat data items, is as follows:

$$3.3*((PI + XINT)/AT) + 1.2 *(WCAP/AT) + (SALE/ AT) + 1.4*(RE/AT) + 0.6*((CHSO*PRCC_F)/LT).$$

EDF Expected default frequency (Bharath and Shumway 2008, and Brogaard et al. 2017).

TAXFEES The ratio of auditor tax fees (in thousand) scaled by total assets.

ATS An indicator variable equal to one if firm's auditor tax fee is above the yearly median of sample firms and zero otherwise

Other Variables

σ_E (*VOLATILITY*) Annualized stock return volatility.

$\Delta PIFO$ (Foreign earnings in year t – foreign earnings in year t-1),

	scaled by total assets in year t-1.
<i>ΔPIDOM</i>	(Domestic earnings in year t – domestic earnings in year t-1), scaled by total assets in year t-1.
<i>ΔSALEFO</i>	(Foreign sales in year t – foreign sales in year t-1), scaled by total assets in year t-1.
<i>ΔSALEDOM</i>	(Domestic sales in year t – domestic sales in year t-1), scaled by total assets in year t-1.
<i>ADVEXP</i>	The ratio of advertising expense on total sales.
<i>AMIHUD</i>	Stock Illiquidity, defines as an average ratio of the daily absolute return to the (dollar) trading volume on that day, giving the absolute (percentage) price change per dollar of daily trading volume, or the daily price impact of the order flow (multiplied by 100,000 for presentation).
<i>ANALYSTS</i>	The monthly average of analyst following over a 12 month period.
<i>AUDCHANGE</i>	An indicator variable equal to one if the firm changed its auditor from the prior year, and zero otherwise.
<i>AUDFEES</i>	Natural logarithm of audit fees.
<i>AUDINDEP</i>	The ratio of non-audit fees less tax fees to audit fees.
<i>AUDTENURE</i>	Number of years the firm has been audited by the same auditor.
<i>CAPINT</i>	The ratio of net property, plant, and equipment to lagged total assets.
<i>CTA</i>	The ratio of cash to total assets.

<i>DEBT</i>	Face value of debt, computed as the sum of debt in current liabilities and one-half of long-term debt.
<i>DEDOWN</i>	The yearly percentages of shares outstanding held by dedicated institutional investors, taking the average over the four quarters of the firm's fiscal year.
<i>DTA</i>	The ratio of long-term debt to total assets.
<i>EQUITY</i>	Number of shares outstanding multiplied by share price at the end of year.
<i>EXRET</i>	Annual excess return, calculated as the difference between company stock return and market return in the same year.
<i>FTS</i>	The ratio of foreign sales to total sales.
<i>GROWTH</i>	Total assets in year t / total assets in year $t-1$ deflated by total assets in year $t-1$.
<i>HAMIHUD</i>	Dummy variable takes value of one if <i>AMIHUD</i> is greater than its median value, and zero otherwise.
<i>HANALYSTS</i>	Dummy variable takes value of one if <i>ANALYSTS</i> is greater than its median value, and zero otherwise.
<i>HDEDOWN</i>	Dummy variable takes value of one if <i>DEDOWN</i> is greater than its median value, and zero otherwise.
<i>HINSTOWN</i>	Dummy variable takes value of one if <i>INSTOWN</i> is greater than its median value, and zero otherwise.
<i>HPIN</i>	Dummy variable takes value of one if <i>PIN</i> is greater than its median value, and zero otherwise.
<i>HQUOTED</i>	Dummy variable takes value of one if <i>QUOTED</i> is greater

	than its median value, and zero otherwise.
<i>HZERO</i>	Dummy variable takes value of one if <i>ZERO</i> is greater than its median value, and zero otherwise.
<i>INSTWON</i>	The average of percentages of shares outstanding held by institutional investors over the four quarters of the firm's fiscal year.
<i>INVVOL</i>	1 / annualized stock return volatility.
<i>ITA</i>	The ratio of intangible assets to total assets.
<i>LAMIHUD</i>	Dummy variable takes value of one if <i>AMIHUD</i> is equal to or less than its median value, and zero otherwise.
<i>LANALYSTS</i>	Dummy variable takes value of one if <i>ANALYSTS</i> is equal to or less than its median value, and zero otherwise.
<i>LDEDOWN</i>	Dummy variable takes value of one if <i>DEDOWN</i> is equal to or less than its median value, and zero otherwise.
<i>LINSTOWN</i>	Dummy variable takes value of one if <i>INSTOWN</i> is equal to or less than its median value, and zero otherwise.
<i>LEVERAGE</i>	Sum of the book value of short-term and long-term debt deflated by the book value of equity.
<i>LNEQUITY</i>	Natural logarithm of total equity.
<i>LNDEBT</i>	Natural logarithm of face value of debt.
<i>LNTA</i>	Natural logarithm of total assets in year t-1.
<i>LOSS</i>	Dummy variable equal to one if net income is less than zero, and zero otherwise.
<i>LPIN</i>	Dummy variable takes value of one if <i>PIN</i> is equal to or less

	than its median value, and zero otherwise.
<i>LQUOTED</i>	Dummy variable takes value of one if QUOTED is equal to or less than its median value, and zero otherwise.
<i>LZERO</i>	Dummy variable takes value of one if ZERO is equal to or less than its median value, and zero otherwise.
<i>MERGER</i>	An indicator variable equal to one if there was merger activity during the year ($ACQ > 0$ or $ACQCSHI > 0$), and 0 otherwise
<i>MTB</i>	$[(\text{Total assets} - \text{book value of common equity}) + \text{market value of common equity}] / \text{total assets}$.
<i>NITA</i>	Ratio of net income to total assets.
<i>NOL</i>	An indicator variable equal to one if there was a tax loss carryforward at the end of the year ($TLCF > 0$), and 0 otherwise
<i>PIN</i>	Probability of insider trading, obtained from http://scholar.rhsmith.umd.edu/sbrown/pin-data .
<i>QUOTED</i>	Stock illiquidity, quoted spread, defined as the average of the daily quoted spread. The quoted spread for each day is computed as $(\text{Ask} - \text{Bid})/M$, where Ask and Bid are the closing best offer and bid prices, respectively and M is the quote midpoint, computed as $(\text{Ask} + \text{Bid})/2$.
<i>R&DEXP</i>	The ratio of research and development expense on total sales.
<i>RAJGOPALSQ</i>	Square of firm residual, calculated using Equation 2 in

Rajgopal and Venkatachalam (2011).

<i>TA</i>	Total assets in million.
<i>WWROS</i>	Consolidated pre-tax income / consolidated sales.
<i>ZERO</i>	Stock illiquidity, the percentage of zero daily returns (Lesmond et al., 1999).

APPENDIX 2 – APTS AND INCOME SHIFTING – PEARSON CORRELATION MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12
1.ΔPIFO												
2.ΔPIDOM	0.14*											
3.ΔSALEFO	0.33*	0.15*										
4.ΔSALEDOM	0.11*	0.20*	0.27*									
5.TAXFEES	0.01	-0.01	0.01	-0.02								
6.ATS	0.02	-0.02*	0.01	0.00	0.53*							
7.WWROS	0.23*	0.29*	0.16*	0.15*	0.00	0.16*						
8.R&DEXP	-0.01	-0.02*	-0.04*	-0.06*	0.00	-0.08*	-0.21*					
9.ADVEXP	-0.01	-0.03*	-0.02	0.00	0.03*	0.05*	0.04*	-0.05*				
10.FTS	0.06*	-0.03*	0.15*	-0.17*	0.06*	0.09*	0.05*	0.28*	-0.10*			
11.CTA	0.04*	0.05*	-0.01	-0.04*	-0.01	-0.13*	-0.06*	0.41*	0.02*	0.16*		
12.DTA	-0.05*	-0.06*	-0.06*	-0.02	0.02	0.15*	-0.06*	-0.24*	0.08*	-0.10*	-0.35*	
13.LNTA	0.01	-0.04*	0.00	0.01	0.08	0.48*	0.34*	-0.19*	0.11*	0.07*	-0.30*	0.30*
14.ITA	-0.02*	-0.04*	-0.01	0.06*	0.06*	0.14*	0.08*	0.00	0.14*	-0.14*	-0.25*	0.23*
15.MERGER	-0.01	-0.06*	0.07*	0.10*	0.03*	0.15*	0.12*	-0.05*	-0.01	-0.04*	-0.14*	0.07*
16.NOL	-0.01	-0.02	-0.01	-0.01	-0.02*	-0.01	-0.09*	0.06*	-0.01	0.05*	0.03*	0.08*
17.CAPINT	0.02	0.00	0.04*	0.04*	-0.07*	0.03*	0.10*	-0.33*	-0.10*	-0.02*	-0.31*	0.27*
18.INSTOWN	0.03*	0.01	-0.01	-0.02	0.05*	0.17*	0.11*	-0.02	-0.02	0.04*	-0.03*	0.06*
19.AUDINDEP	-0.01	-0.02*	0.00	0.01	0.12*	0.07*	0.02*	-0.02*	0.03*	-0.08*	-0.06*	0.07*
20.AUDTENURE	-0.01	-0.03*	-0.05*	-0.02*	0.08*	0.21*	0.15*	-0.09*	0.04*	0.04*	-0.11*	0.06*
21.LEVERAGE	-0.09*	-0.09*	-0.08*	-0.10*	-0.01	0.00	-0.26*	-0.19*	0.00	-0.07*	-0.25*	0.50*
22.AUDFEES	-0.01	-0.06*	-0.02	-0.02	0.15*	0.48*	0.20*	-0.14*	0.10*	0.15*	-0.21*	0.26*
23.AUDCHANGE	0.00	0.00	-0.02	-0.03*	-0.03*	-0.09*	-0.06*	0.00	-0.02	-0.01	0.00	-0.02

* Indicates statistical significance at the 5 percent level.

APPENDIX 2 – APTS AND INCOME SHIFTING – PEARSON CORRELATION MATRIX (CONTINUE)

	13	14	15	16	17	18	19	20	21	22
14.ITA	0.22*									
15.MERGE	0.26*	0.33*								
16.NOL	0.01	0.08*	0.01							
17.CAPINT	0.22*	-0.35*	-0.08*	-0.05*						
18.INSTOWN	0.26*	0.08*	0.10*	0.00	0.02*					
19.AUDINDEP	0.11*	0.07*	0.10*	-0.04*	0.01	0.00				
20.AUDTENURE	0.35*	0.05*	0.08*	-0.02*	0.04*	0.12*	0.00			
21.LEVERAGE	0.05*	0.00	-0.06*	0.05*	0.18*	-0.09*	0.03*	-0.04*		
22.AUDFEES	0.87*	0.23*	0.25*	0.05*	0.07*	0.23*	0.00	0.32*	0.05*	
23.AUDCHANGE	-0.13*	-0.04*	-0.05*	0.00	-0.01	-0.08*	0.01	-0.26*	0.04*	-0.12*

* Indicates statistical significance at the 5 percent level.

APPENDIX 3 – APTS AND DEFAULT RISK – PEARSON CORRELATION MATRIX

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1.DEFAULT1																				
2.TAXFEES	-0.02*																			
3.ATS	-0.12*	0.52*																		
4.DEFAULT2	0.97*	-0.03*	-0.09*																	
5.EDF	0.27*	-0.02*	-0.05*	0.25*																
6.RAJGOPALSQ	0.24*	0.02*	-0.12*	0.20*	0.11*															
7.INSTOWN	-0.18*	0.07*	0.24*	-0.15*	-0.10*	-0.15*														
8.DEDOWN	0.00	0.03*	0.07*	0.01	-0.01	-0.05*	0.40*													
9.ANALYSTS	-0.16*	0.04*	0.29*	-0.13*	-0.08*	-0.14*	0.30*	0.08*												
10.PIN	0.17*	-0.08*	-0.37*	0.13*	0.11*	0.18*	-0.42*	-0.10*	-0.58*											
11.LNEQUITY	-0.28*	0.10*	0.45*	-0.24*	-0.25*	-0.23*	0.42*	0.13*	0.68*	-0.77*										
12.LNDEBT	-0.01	0.06*	0.41*	0.04*	0.05*	-0.19*	0.33*	0.13*	0.52*	-0.55*	0.74*									
13.NI/TA	-0.55*	0.02*	0.21*	-0.53*	-0.23*	-0.27*	0.20*	0.02*	0.18*	-0.21*	0.38*	0.27*								
14.INVVOL	-0.19*	0.01*	0.19*	-0.17*	-0.23*	-0.16*	0.10*	0.03*	0.22*	-0.21*	0.49*	0.39*	0.32*							
15.EXRET	-0.18*	0.00	0.00	-0.19*	-0.29*	-0.03*	0.01	-0.01	-0.04*	0.00	0.10*	-0.03*	0.19*	-0.08*						
16.MTB	-0.10*	0.04*	-0.04*	-0.14*	-0.14*	0.11*	-0.03*	-0.01	0.12*	-0.15*	0.19*	-0.17*	-0.19*	0.00	0.24*					
17.QUOTED	0.24*	-0.03*	-0.30*	0.19*	0.20*	0.21*	-0.41*	-0.11*	-0.38*	0.70*	-0.66*	-0.44*	-0.29*	-0.30*	0.00	-0.12*				
18.AMIHUD	0.16*	-0.02*	-0.19*	0.12*	0.14*	0.15*	-0.26*	-0.08*	-0.21*	0.45*	-0.41*	-0.25*	-0.16*	-0.17*	0.00	-0.10*	0.81*			
19.ZERO	0.30*	-0.05*	-0.32*	0.25*	0.15*	0.21*	-0.42*	-0.10*	-0.43*	0.71*	-0.67*	-0.46*	-0.32*	-0.24*	-0.02*	-0.09*	0.71*	0.50*		
20.LOSS	0.37*	-0.02*	-0.18*	0.36*	0.29*	0.18*	-0.17*	0.00	-0.18*	0.26*	-0.40*	-0.25*	-0.63*	-0.39*	-0.17*	0.03*	0.30*	0.18*	0.33*	
21.MERGER	-0.11*	0.08*	0.19*	-0.10*	-0.08*	-0.09*	0.15*	0.01*	0.16*	-0.22*	0.26*	0.21*	0.18*	0.15*	-0.01*	-0.04*	-0.22*	-0.14*	-0.22*	
22.NOL	0.09*	0.05*	0.03*	0.10*	0.03*	0.03*	0.03*	0.02*	0.03*	-0.02*	0.00	-0.01	-0.11*	-0.11*	-0.04*	0.04*	-0.03*	-0.01	0.00	
23.CAPINT	0.02*	-0.19*	-0.07*	0.04*	0.05*	-0.08*	-0.02*	-0.01	0.09*	-0.05*	0.09*	0.24*	0.15*	0.11*	0.03*	-0.16*	-0.06*	-0.04*	-0.09*	
24.AUDINDEP	0.01	0.088	0.06*	0.01	0.00	0.01	-0.03*	-0.01	0.02*	0.00	0.04*	0.05*	0.00	0.00	0.03*	0.00	0.04*	0.00	0.01	
25.AUDTENURE	-0.11*	0.09*	0.20*	-0.10*	-0.08*	-0.08*	0.16*	0.00	0.21*	-0.23*	0.33*	0.27*	0.17*	0.25*	-0.02*	-0.03*	-0.20*	-0.10*	-0.22*	
26.LEVERAGE	0.22*	-0.03*	0.00	0.22*	0.65*	0.03*	-0.05*	0.03*	-0.09*	0.14*	-0.21*	0.25*	-0.12*	-0.17*	-0.17*	-0.25*	0.19*	0.13*	0.16*	
27.AUDFEES	-0.09*	0.19*	0.508	-0.06*	-0.06*	-0.19*	0.40*	0.14*	0.53*	-0.65*	0.81*	0.75*	0.27*	0.37*	-0.04*	-0.06*	-0.56*	-0.34*	-0.55*	
28.AUDCHANGE	0.04*	-0.02*	-0.08*	0.03*	0.04*	0.05*	-0.11*	-0.02*	-0.09*	0.13*	-0.14*	-0.09*	-0.07*	-0.09*	0.00	-0.02*	0.13*	0.06*	0.11*	
29.LNTA	-0.18*	0.08*	0.48*	-0.13*	-0.07*	-0.25*	0.42*	0.14*	0.63*	-0.71*	0.91*	0.88*	0.39*	0.46*	-0.01	-0.13*	-0.59*	-0.36*	-0.61*	
30.GROWTH	-0.14*	-0.04*	-0.01	-0.13*	-0.11*	-0.03*	-0.02*	-0.04*	0.03*	-0.09*	0.10*	0.00	0.20*	-0.01	0.19*	0.16*	-0.12*	-0.09*	-0.11*	

* Indicates statistical significance at the 5 percent level.

APPENDIX 3 – APTS AND DEFAULT RISK – PEARSON CORRELATION MATRIX (CONTINUE)

	20	21	22	23	24	25	26	27	28	29
21.MERGER	-0.18*									
22.NOL	0.13*	0.06*								
23.CAPINT	-0.11*	-0.13*	-0.16*							
24.AUDINDEP	0.00	0.06*	-0.05*	0.01						
25.AUDTENURE	-0.17*	0.08*	-0.02*	-0.01	-0.03*					
26.LEVERAGE	0.24*	-0.07*	0.01	0.16*	0.02*	-0.07*				
27.AUDFEES	-0.24*	0.29*	0.10*	-0.03*	-0.09*	0.32*	0.03*			
28.AUDCHANGE	0.06*	-0.03*	-0.01	0.00	0.03*	-0.28*	0.05*	-0.13*		
29.LNTA	-0.35*	0.25*	-0.01	0.18*	0.04*	0.33*	0.08*	0.87*	-0.13*	
30.GROWTH	-0.15*	0.17*	0.00	0.18*	0.10*	-0.07*	-0.11*	-0.02*	0.00	0.02*

* Indicates statistical significance at the 5 percent level.

APPENDIX 4 – SUMMARY OF KEY EMPIRICAL STUDIES CITED

S/N	CITATION	OBJECTIVE	METHODS, DATA, AND SAMPLE	FINDINGS
1	Abbott, L. J., Parker, S., Peters, G. F., & Raghunandan, K. (2003). An Empirical Investigation of Audit Fees, Nonaudit Fees, and Audit Committees. Contemporary Accounting Research, 20, 215–234.	The authors examine whether audit committee characteristics influence the ratio of non-audit services fees to audit fees.	The authors use regression analysis to link the test variables and controls. The initial sample is based on all proxy statements (excluding mutual funds and other financial registrants) filed with the SEC between 5 th February 2001 - 16 th March 2001. The authors ensure that the proxy statements have a corresponding 10K filing available by 16 th March 2001. They also include a sample of	The authors argue that independent audit committees and those that actively monitor firms’ financial aspects have higher motivation to limit non-audit services fees to enhance auditor independence or to manage litigation-related concerns about auditor independence. The authors find that the independence and meeting frequency of audit committees are negatively related to the ratio of non-audit fees to audit fees. Specifically, they find that firms with audit committees that consist of all independent directors and meet at least four times per year have a lower ratio of non-audit fees to audit fees.

			250 randomly selected proxy filings from 19 th March 2001 to 30 th June 2001. The final sample consists of 538 U.S. firms.	The result is robust even after the authors exclude information technology fees from non-audit fees and include it as a control variable. The result is also robust to including board characteristics and profitability. The result also holds when the authors consider Big5 audit firms, client complexity, audit opinion, and regulated industries.
2	Antle, R., Gordon, E., Narayanamoorthy, G., & Zhou, L. (2006). The joint determination of audit fees, non-audit fees, and abnormal accruals. <i>Review of Quantitative Finance and Accounting</i> , 27, 235–266.	The authors investigate the relationship among audit fees, non-audit fees, and abnormal accruals as endogenous variables in a three simultaneous equation model.	The authors use regression analysis to link the test variables and controls. The test develops an empirical model based on United Kingdom data and United States data is used as comparison. Data on auditor fees in the	The authors argue that previous studies fail to consider that audit fees, non-audit fees, and abnormal accruals are jointly determined and the variables are related to each other. They find a positive and significant effect of audit fees on abnormal accruals in both the United States and United Kingdom. They argue that this is consistent with the unconscious influence of bias theory in the behavioural literature.

			<p>United Kingdom is gathered from the Financial Times, while other required data is obtained from the Global Vantage database. For United States data, they gather the auditor fees data from the Investor Responsibility Resource Center (IRRC) and other required data is gathered from the Compustat database. The final sample consists of 2,294 firm-year observations on United Kingdom data during 1994 – 2000 period and 1,570 United States firms for the fiscal year 2000.</p>	<p>However, they fail to find that abnormal accruals significantly affect audit fees.</p> <p>Furthermore, they find a negative effect of non-audit fees on abnormal accruals in the United Kingdom consistent with productive effect of non-audit services. They also find evidence consistent with a knowledge spillovers effect from auditing to non-audit services and from non-audit services to auditing.</p>
3	Bennett, R. L., Güntay,	The authors investigate the	The authors use regression	The authors argue that CEOs who

<p>L., & Unal, H. (2015). Inside debt, bank default risk, and performance during the crisis. <i>Journal of Financial Intermediation</i>, 24, 487–513.</p>	<p>relationship between CEO inside debt holdings, default risk, and performance during the global financial crisis.</p> <p>The authors examine the relationship between risk-taking and CEO inside equity holdings including options. In addition, they examine whether CEO inside debt holdings (pension benefits and deferred compensation) influences the default risk and performance of bank holding companies. They also compare the power of</p>	<p>analysis to link the test variables and controls.</p> <p>The sample consists of U.S. financial institutions that filed a regulatory report in 2006Q4. Data on these institutions are obtained from the Y9C filings and bank-level Call Reports. The CEO compensation information is obtained from the Compustat Execucomp database and DEF14A filings from the SEC EDGAR database. The authors remove bank holding companies with assets in insured U.S. depository institutions less than 20% of</p>	<p>maximize shareholders interest might engage in activities that are unfavorable for other stakeholders such as debt holders and deposit insurers. However, the interest of those other stakeholders might potentially be insured if CEOs are compensated using inside debt. This happens as CEOs are then bound to be more concerned about the firms' long-term solvency and thus engage in favorable investments for those other stakeholders. Hence, they argue that firms with higher inside debt compensation for their CEO are less likely to default and perform better during the financial crisis period.</p> <p>The authors find that firms with higher CEO inside debt relative to inside equity have lower default risk and better</p>
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		<p>inside debt and inside equity to explain default risk and performance of such institutions.</p>	<p>total assets. They also remove institutions with insignificant banking activity and subsidiaries of foreign bank holding companies. These specifications result in a sample of 371 bank holding companies.</p>	<p>performance during the crisis period. Further, they find that inside debt plays a significant role in signalling the default risk and performance of such companies.</p> <p>However, they find that their compensation measure cannot explain differences in default risk of bank holding companies with assets greater than \$100 billion. This provides evidence that compensation is not the driver of risk-taking activities in large banks.</p> <p>Further, they find that bank holding companies with higher inside debt in 2006 gain better ratings on capital strength, earnings power, and risk management. This indicates that banks with higher CEO inside debt have a stronger capital position,</p>
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				better management, stronger earnings, and are in a better position to face market shocks.
4	Brogaard, J., Li, D., & Xia, Y. (2017). Stock liquidity and default risk. <i>Journal of Financial Economics</i> , 124, 486–502.	The authors examine the influence of stock liquidity on default risk.	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The sample of the study consists of U.S. firms during the period 1994 –2014. The authors gather the accounting data from the Compustat and prices from the CRSP database. They also use the Trade and Quoted database to obtain intraday trades and quotes. They exclude financial firms and exclude firm-year observations on</p>	<p>The authors argue that liquidity can lead to higher default risk if it increases noise trading, thereby causing higher mispricing and stock volatility. However, liquidity may also reduce default risk if it enhances price efficiency or improves governance by blockholders through greater ease of investors to exit.</p> <p>They find a negative association between liquidity and default risk. They estimate that a one standard deviation increase in liquidity is associated with a 26.89% reduction in default risk over their sample mean.</p>

			<p>firms with less than 200 active trading days during a year. If accounting information is missing in a year, the authors replace the missing information with the previous non-missing value. The final sample consists of 7,128 firms and 51,527 firm-year observations.</p>	<p>Further, they test for information efficiency and governance as channels through which liquidity may affect default risk. They argue that higher information efficiency can lead to better performance. In that case, higher liquidity allows informed investors to obtain advantage from their private information, this motivates investors to seek information and trade on it which then leads to more informed stock prices. As managers use information from stock prices for their managerial decisions, information efficiency may lead to better investment decisions, thereby lowering default risk. For the governance channel, they argue that liquidity improves the ability of blockholders to sell stocks thus strengthening the threat of exit which is an</p>
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				<p>important governance mechanism. Consequently, it limits managers opportunistic behaviour and makes managers engage in value-enhancing investments, thereby lowering default risk. As expected, the authors find that liquidity improves default risk by enhancing information efficiency and governance. Furthermore, they find that information efficiency has higher explanatory power on reduction of default risk than does the corporate governance channel.</p>
5	<p>Clausing, K. A. (2009). Multinational Firm Tax Avoidance and Tax Policy. <i>National Tax Journal</i>, 62, 703–725.</p>	<p>Clausing (2009) examines the relationship between the profit rates of U.S. affiliates and foreign country tax rates and also the influence of income taxes on U.S.</p>	<p>The author develops a mathematical model to explain the concept of corporate tax revenue and uses regression analysis to link the test variables and controls.</p>	<p>Clausing (2009) argues that multinationals have both financial and real responses to taxation of corporate income. Financial responses may include activities such as shifting income to jurisdictions with lower taxes. Real responses may include locating more assets, employment, and economic</p>

		<p>multinationals' real operations.</p>	<p>The author uses data over the period 1982 – 2004 for approximately 60 countries where the Bureau of Economic Analysis provided detailed data related to U.S. multinational firms operations. Data on statutory tax rates is taken from the various editions of PriceWaterhouseCoopers' Corporate Taxes: A Worldwide Summary. Data on GDP and GDP per-capita are obtained from the World Bank's World Development Indicators database. For the parents tax payments in the</p>	<p>activity in low tax countries.</p> <p>Clausing (2009) finds that a 1 percentage point lower tax rate in a host country compared to the U.S. is related to a 0.5 percentage point higher profit rate for affiliates based in that host country.</p> <p>Clausing (2009) estimates that in 2002, \$87 billion of income was shifted out of the U.S. and that by 2004, this would be \$180 billion.</p> <p>In term of real impact, Clausing (2009) estimates that 1 percentage-point reduction in the tax rate difference would increase employment by 1.6%. The result indicates that employment based tax responses result in approximately \$80 billion lower of U.S. profits and about 15% lower U.S.</p>
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			U.S., the author relies on the effective tax rates data in Devereux and Griffith (2003).	government corporate tax revenues.
6	Collins, J., Kemsley, D., & Lang, M. (1998). Cross-Jurisdictional Income Shifting and Earnings Valuation. <i>Journal of Accounting Research</i> , 36, 209–229	The authors investigate two issues. First, they examine the extent of income shifting by U.S. multinationals. Second, they test how investors value shifted income. Specifically, whether investors differentially value shifted income based on its true sources or its reported sources.	The authors use regression analysis to link the test variables and controls. The authors test the issue using all U.S. manufacturing firms (SIC 2000 – 3999) available in the the Compustat database during the period 1984 – 1992. The authors exclude observations with negative pre-tax domestic and foreign income or where the average foreign tax rate less the U.S. statutory tax rate is less than -1 or	The U.S. taxes all income of U.S. companies irrespective of the income source but foreign-sourced income is taxed only on repatriation to the U.S at the U.S. rate and is subject to a credit for foreign taxes paid. However, it means that U.S. multinationals that have higher foreign tax rates compared to the U.S. rate will not receive a full U.S. credit for their foreign tax payments. Consequently, such firms have an incentive to shift pre-taxed foreign income to the United States. On the other hand, U.S. multinationals with U.S. rate in excess of their average foreign tax rate will face nonbinding

			<p>greater than 1. The final sample consist of 2,517 firm-year observations on 577 manufacturing companies</p>	<p>foreign tax credit limitations. However, when the after-foreign-tax dollar is repatriated to the U.S, they will be liable for tax at the U.S. tax rate. Hence, shifting U.S. income to low-tax foreign jurisdictions results only in deferral, not permanent savings.</p> <p>The authors investigate the cross-sectional relationship between firm-level foreign profit margins and average foreign tax rates. If U.S. multinationals respond to high (low) foreign tax rates by shifting income into (out of) the U.S, then ceteris paribus, they expect a negative relationship between foreign profit margins and average foreign tax rates.</p> <p>They find that for U.S. multinationals that</p>
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				<p>face higher average foreign tax rates compared to the U.S. tax rate there is stronger evidence of tax-motivated income shifting than for other U.S. multinationals. They estimate that these multinationals shift approximately \$25-30 million of income per company to the U.S each year. For the full sample, this equals a total transfer of approximately \$34-40 billion of income to the U.S.</p> <p>For the second issue, the authors argue that if investors differently price unshifted domestic and foreign income and if investors recognize that there is a portion of reported domestic income sourced from foreign income, the multiple assigned to reported domestic earnings will reflect that these earnings are a mix of foreign and</p>
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				domestic source income. As per their expectation, they find that investors recognize the effects of income shifting in their valuations.
7	Cook, K. A., Huston, G. R., & Omer, T. C. (2008). Earnings Management through Effective Tax Rates: The Effects of Tax-Planning Investment and the Sarbanes-Oxley Act of 2002. Contemporary Accounting Research, 25(2), 447–471.	The authors investigate three issues. First, they examine the extent to which greater third-to-fourth-quarter ETR reductions are associated with higher tax fees paid to auditors for firms that would miss their consensus earnings forecasts absent ETR changes. Second, they investigate the relationship of firms' choices to purchase tax services from	The authors use regression analysis to link the test variables and controls. The authors obtain the data from several sources. Tax fees data is gathered from the Audit Analytics database, analyst forecast data is obtained from the I/B/E/S database, and financial data is collected from the Compustat database. The authors exclude	The authors find that higher tax services fees paid to auditors are associated with greater reductions in third to fourth quarters effective tax rates (ETRs) for companies that would miss consensus earnings forecasts in the absence of tax expense management. Further, they also find that among companies that do not purchase auditor provided tax services, those that would miss consensus earnings forecast absent ETR changes, the ETR decreases are larger than for other companies. Furthermore, the authors find that tax fees paid to auditors are associated with larger third to fourth quarter ETR

		<p>providers other than their auditors (or to employ “in-house” tax-planning staff) on their use of third-to-fourth-quarter ETR changes to meet earnings targets. Third, they test the relationship between the passage of SOX and the decision to invest in tax planning and to engage in earnings management.</p>	<p>observations with less than \$10 million total assets and where the differences between consensus forecasts and actual earnings per share (EPS) exceed five cents per share. The authors also delete observations within the top and bottom 1% for each of the following: the effective tax rate in third quarter, the difference between the effective tax rate in third quarter and fourth quarter, and the ratio of induced tax change to pre-tax income. The final sample consists of 1,802 firm-year observations during the period 2000 –</p>	<p>decreases in both pre- and post- SOX periods.</p>
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			2004.	
8	Davydenko, S. A., Strebulaev, I. A., & Zhao, X. (2012). A Market-Based Study of the Cost of Default. The Review of Financial Studies, 25, 2959–2999.	The authors propose a novel approach to estimation of the cost of default. The authors infer the cost of default from the change in the market value of firms' assets upon default.	The authors use a generalized form of event study methodology. They use a sample of defaulting and non-defaulting firm-month observations to compute the risk premium from observed debt prices which is used to transform the hazard rate to the risk-neutral measure. Finally, they use an iterative procedure to estimate the continuation value of the firm. They use default data from the Default & Recovery	They argue that investors do not fully anticipate default in their decisions. Consequently, public announcement of default will contain information prompting investors to correct their valuations. The correction, therefore, reflects both the cost of default and the unanticipated default news. They find that for an average defaulting firm, the mean (median) of cost of default is 21.7% (22.1%) of the market value of assets. Specifically, the cost of a distressed bond exchange is 14.7%, while it is 30.5% for bankruptcy. Moreover, they find that the cost of default of highly leveraged firms and investment-grade firms is 20.2% and 28.8%, respectively. They also find

			<p>Database (DRD) from Moody's, the announcement of dates for distressed exchange offers are gathered from Factiva, monthly bond prices are obtained from the Merrill Lynch, Bank loan prices are obtained from quotes from the LSTA/LPC Mark-to-Market Pricing Database, equity prices are gathered from the CRSP, CapitalIQ, and OTC equity price quoted, accounting information is gathered from the Compustat database, descriptive information of bonds is obtained from the Mergent's Fixed Income</p>	<p>that the cost of default varies across industries. Specifically, they find that the cost of default varies from 9.7% for business equipment to 48.5% for steel companies.</p>
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			<p>Securities Database (FISD).</p> <p>The authors exclude non-U.S. firms from the DRD lists and retain only defaults by industrial, transportation, and utility companies. They also remove dividend omissions and other events (except public bond defaults). Finally, they remove firms that were alleged to have been involved in fraud within two years of the default.</p> <p>The final sample comprises 175 U.S. firms that defaulted between January 1997 and December 2010.</p>	
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9	<p>De Simone, L., Ege, M. S., & Stomberg, B. (2015). Internal Control Quality: The Role of Auditor-Provided Tax Services. The Accounting Review, 90, 1469–1496.</p>	<p>The authors examine two issues. First, they examine whether auditor provided tax services improve firms’ internal control quality. Second, they search for factors that can strengthen the potential benefits of auditor provided tax services on improving firms’ internal control quality.</p>	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The sample consists of 32,048 firm-year observations on 5,830 U.S. firms over the period 2004 – 2012.</p> <p>The authors rely on the Audit Analytics database to obtain auditor internal control opinions. Accounting information is obtained from the Compustat and CRSP database.</p>	<p>The authors argue that purchase of auditor provided tax services facilitates earlier assessment by the audit firms of the internal control environment relating to material transactions. Firms thus have higher possibility of mitigating internal control deficiencies and preventing material weaknesses. They also argue that providing tax services increases the opportunity for communication between tax partner, audit partner, and audit team which may improve the identification of client’s internal control weakness. Consequently, it may lower the likelihood of material weakness being discovered at year-end.</p> <p>The authors find a negative relationship between auditor provided tax services and</p>
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				disclosure of material weaknesses but that this is not impairment of auditor independence. Rather they point to internal control quality as a mechanism through which auditor provided tax services improve overall financial reporting quality.
10	Dharmapala, D., & Riedel, N. (2013). Earnings shocks and tax-motivated income-shifting: Evidence from European multinationals. <i>Journal of Public Economics</i> , 97(Supplement C), 95–107.	The authors investigate the income shifting behaviour of multinationals using a new approach. Specifically, they develop an approach to estimate the existence and magnitude of tax-motivated income shifting by exploiting exogenous earnings shocks to the parent firm and investigate how these shocks	The authors develop a mathematical model and use difference-in-difference test. The authors rely on the AMADEUS database to gather 18,408 observations from 1,806 subsidiaries during the period 1995 – 2005 for all EU-25 countries, except Cyprus, Malta, and Slovenia.	Overall, the authors find that positive earnings shocks for the parent companies are more strongly related to the increase in pre-tax income of subsidiaries in low-tax countries compared to the pre-tax income of high-tax affiliates. Furthermore, they find that the estimated effect is mostly related to the strategic use of debt across affiliates.

		propagate across low-tax and high-tax multinational subsidiaries.	They include only multinational subsidiaries where the immediate shareholder (parent) owns at least a 90% stake in the subsidiaries and the parent is also located in an EU-25 country. They also restrict the firms to have positive pre-tax income and more than 5 employees.	
11	Dyreng, S. D., & Markle, K. S. (2016). The Effect of Financial Constraints on Income Shifting by U.S. Multinationals. The Accounting Review, 91(6), 1601–1627.	The authors develop a new methodology to measure income shifting and examine the influence of financial constraints on income shifting.	The authors develop a mathematical model to analyze income shifting and use regression analysis to link the test variables and controls. The sample consists of U.S.	Consistent with the authors expectation, they find that financially constrained firms shift less income from the U.S. to foreign countries than do their unconstrained peers. They estimate that financially constrained firms shift out 20% less of pre-shifted income than do unconstrained firms. In dollar term, the mean (median)

			<p>multinationals during the period 1998 – 2011. They delete observations where the sum of foreign and domestic sales is not within 1 percent of total sales or the sum of foreign and domestic pre-tax income is not within 1 percent of total pre-tax income, and observations with less than \$1 million foreign or domestic sales. They also require firms to have non-missing values for total assets, and at least two consecutive years of non-missing values of pre-tax foreign income and pre-tax domestic income. They delete</p>	<p>constrained firm shifts \$16 million (\$7 million) out of the U.S. each year, while the mean (median) unconstrained firm shifts \$321 million (\$134 million) out of the U.S. each year.</p>
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			<p>flow-through entities, financial, and utility firms. They delete observations with relatively large interest revenues or special items and other non-operating income (either item in excess of 10 percent of sales). Finally, they drop observations with total assets in the current or previous year less than \$1 million. The final sample comprises 9,727 firm-year observations.</p>	
12	<p>Ferguson, M. J., Seow, G. S., & Young, D. (2004). Nonaudit Services and Earnings Management: UK</p>	<p>The authors extend previous research by investigating the relationship between the auditor joint provision of</p>	<p>The authors use regression analysis to link the test variables and controls. The authors use three</p>	<p>The authors extend the extant literature by addressing several potential methodological and data-related limitations in prior studies. First, they use alternative measures of earnings</p>

	<p>Evidence. Contemporary Accounting Research, 21, 813–841.</p>	<p>audit and non-audit services and earnings management using data on United Kingdom firms.</p>	<p>alternative measures of earnings management and three alternative measures of non-audit services (ratio of non-audit services to total fees, natural log of non-audit services, and decile rank, by audit firm practice office, of non-audit services fees paid by clients).</p> <p>The sample data is obtained from the Global Vantage database. The authors exclude firms in industries with less than eight firms, financial firms, and firms with less than two annual reports during the period 1996 –</p>	<p>management namely the likelihood of criticism by financial analyst and investors, regulatory investigation of firm accounting practices, restatement of prior financial statements or adjustment of current period results, following the issuance of FRS No.12: <i>Provisions, contingent liabilities, and contingent assets</i>. Second, as prior studies mostly use a single period subsequent to February 2001, accruals are likely to have been affected by the global economic downturn that happened during that period. The authors address that issue by using United Kingdom data from period 1996 – 1998 when the economic environment was stable. Third, the authors mitigate the possibility that the threat to auditor independence is a result of recurring non-</p>
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			<p>1998 period. Annual reports are obtained from the Mergent Online or Lexis-Nexis Academic Universe. The final sample consists of 610 firms.</p>	<p>audit service purchases by using mean values over 1996 – 1998 and similarly for fluctuation of accruals</p> <p>In general, the authors find that earnings management is positively related to non-audit services for all three measures of earnings management and non-audit services except for one (where earnings management is measured using the likelihood of analyst and investor criticism or regulatory investigation of accounting practices or where non-audit services are measured using the decile rank). The results are robust when the authors consider goodwill treatment, systematic industry differences, auditor changes, and an alternative measure of non-audit services. When considering the alternative</p>
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				<p>specifications of restatements, they find that the association between non-audit services and restatements depends on whether the restatements relate to earnings or the balance sheet. Specifically, they find robust evidence that non-audit services are positively related to earnings-related restatements, for all three measures of non-audit services used in the study. However, they find a positive relationship between non-audit services and balance sheet related restatements for only one of the three measures, namely log of non-audit fees.</p>
13	Fortin, S., & Pittman, J. A. (2008). The Impact of Auditor-Related Tax Services on Corporate Debt Pricing. Journal of	The authors investigate the value of auditor provided tax services in respect of bondholders.	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The authors use the Thomson</p>	The authors find a lower yield spreads for firms that pay proportionately larger tax fees to their auditor. Their result is economically significant where one standard deviation increase in the ratio of

	<p>the American Taxation Association, 30(2), 79–106.</p>		<p>Financial’s SDC Platinum U.S. New Issues database to gather all public bonds issue during January 1, 2001 - December 31, 2005. The authors then merge that data with firm-specific financial data from the Compustat database and hand collected data from SEC filings. The authors restrict the sample to only new public debt issues and straight bonds with fixed rates. The final sample consists of 694 public debt issues.</p>	<p>tax fees to the sum of audit fees and audit-related fees result in a 6 basis points decrease of yield spreads.</p> <p>Further, they find that the negative relationship between auditor provided tax services and yield spread is more pronounced when they isolate issues made by firms with greater information asymmetry. Specifically, they find that the negative relationship is stronger for shorter maturity bonds and financial firms.</p> <p>They argue that their results provide evidence of the positive effects of auditor provided tax services, such as knowledge spillover, overcome the negative effects such as impairment of auditor independence.</p>
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14	Francis, J. R., & Ke, B. (2006). Disclosure of fees paid to auditors and the market valuation of earnings surprises. <i>Review of Accounting Studies</i> , 11, 495–523.	The authors investigate the effect of mandated fees disclosure on market perception of auditor independence and earnings quality.	<p>The authors use regression analysis to link the test variables and controls (difference-in-difference analysis).</p> <p>The authors examine the issue by exploiting the market response to quarterly earnings in the year before and after the initial fees disclosure and test whether non-audit fees can explain the market response in those two periods.</p> <p>The authors rely on several data sources such as the SEC EDGAR, Standard and Poor's, The Emerson</p>	<p>The authors argue that if fees disclosure contains new information for investors and if they believe that non-audit services may impair auditor independence, then investors will value the earnings of firms with higher non-audit fees lower than firms with lower non-audit fees.</p> <p>The authors find that, in the period before fees disclosure, investors do not discount the earnings of firms that subsequently report high non-audit fees. In contrast, in the year after fees disclosure, the earnings response coefficient of firms with higher non-audit fees is lower than those with lower non-audit fees. The results are robust to excluding Big5 clients and excluding earnings announcements after 11 September 2001. The results are also</p>
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			<p>Company, CRSP, Compustat, and I/B/E/S. They limit the sample to earnings announcement made within 1 year of the firm initial proxy statement fees disclosure date. The final sample is 16,910 firm-quarter observations on 3,133 U.S. firms over the period 1999 – 2002.</p>	<p>robust to controlling for earnings persistence, systematic risk, and growth opportunities. They argue that the results indicate that fees disclosures provide new information and the market perceives that higher non-audit fees potentially impair auditor independence.</p>
15	<p>Frankel, R. M., Johnson, M. F., Nelson, K. K., Kinney, J., & Libby, R. (2002). The relationship between auditors' fees for nonaudit services and</p>	<p>The authors examine whether the provision of non-audit services is related to earnings management and market reactions to the disclosure of auditor fees.</p>	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The initial sample is based on proxy statements on the SEC EDGAR database with a</p>	<p>The authors find a positive relationship between non-audit services and the likelihood of reporting small earnings surprise, the magnitude of absolute discretionary accruals, and the magnitude of income-increasing and income-decreasing discretionary accruals.</p>

	<p>earnings management. The Accounting Review, 77, 71–114.</p>		<p>filing date between 5th February 2001 - 15th June 2001. The authors exclude financial firms and firms that changed auditor during the year. The authors then match the data with the Compustat database. The final sample is 3,074 firms. The authors use the CRSP database to calculate abnormal returns.</p>	<p>However, they do not find a significant relationship between non-audit services and small earnings surprise for larger firms. They also fail to find a relationship between non-audit services and the likelihood of reporting small increase in earnings. Overall, they conclude that the result provides evidence that firms purchasing non-audit services engage in a greater degree of earnings management than do other firms.</p> <p>In addition, they find that audit fees are negatively related to earnings management. They also find a significant negative relationship between abnormal returns and the disclosure of higher than expected non-audit fees. However, that relationship does not hold when longer</p>
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				event windows are used to measure abnormal returns.
16	Gaynor, L. M., McDaniel, L. S., & Neal, T. L. (2006). The Effects of Joint Provision and Disclosure of Nonaudit Services on Audit Committee Members’ Decisions and Investors’ Preferences. The Accounting Review, 81, 873–896.	The authors examine the effect of mandatory disclosure requirement on the decision of audit committees to use non- audit services. They investigate three issues related to the consequences of the Sarbanes-Oxley Act of 2002 and the mandatory disclosure requirement on audit practices. First, whether audit committees consider the effect of non- audit services on audit quality when they decide	This study uses a 2 x 2 between participants experimental research method. In the 2 x 2 approach used, the authors manipulate the type of non-audit service (risk management service versus human resource management service) and the type of company (private versus public). Further, the authors also use regression analysis. The study uses 100 corporate directors who attended one of 12 different KPMG Audit	The authors find that the decision of audit committees to recommend the joint provision of audit and non-audit services by auditors is affected by their perception of the effect of the joint provision on audit quality. They find that both audit committees and investors are more likely to recommend the joint provision if it improves audit quality. However, the authors find that public disclosure lowers the likelihood of audit committees approving the joint provision, even when they believe that the joint provision may result improvement in audit quality.

		<p>to approve non-audit services from the auditor. Second, how the mandated disclosures influence audit committees' pre-approval decisions. Third, how consistent the decisions of audit committees are with investors' preferences on the auditors' joint provision of audit and non-audit services.</p>	<p>Committee Institute Roundtables around the U.S. during 2003. In the experiment, 81 act as audit committee members to recommend whether auditor should provide non-audit services and the remaining 19 act as public company investors to express preferences regarding auditor provision of risk management services.</p>	
17	<p>Giesecke, K., Longstaff, F. A., Schaefer, S., & Strebulaev, I. (2011). Corporate bond default risk: A 150-year</p>	<p>The authors examine U.S. corporate bond default rates using a new data set over the period 1866 to 2008.</p>	<p>Using financial and macroeconomics variables, the authors use the fraction of the total par value of the corporate bond market that enters into financial distress</p>	<p>They find that default rates may be predicted using stock market returns, changes in stock market volatility, and changes in gross domestic product. Surprisingly, they fail to find predictive power for credit spreads.</p>

	<p>perspective. Journal of Financial Economics, 102, 233–250.</p>	<p>The authors specifically examine the issue of bonds issued by U.S. firms in non-financial sectors.</p>	<p>during each year of the sample period to measure default rates. Specifically, they use a three-state Markov-chain regime-switching model to examine the marginal effect of financial and macroeconomics variables to explain variation in default rates.</p> <p>The authors rely on several data sources to gather their sample. Data for the period 1866 – 1899 is obtained from the Commercial and Financial Chronicle (CFC), data for the period 1900 – 1965 is taken</p>	<p>They find that the bond market has experienced several clustered default events. Among those events, the worse event occurred during the railroad crisis in the years 1873 – 1875. They find that the default rate was more than one-third of the total par value of the corporate bond market during that period. Interestingly, they find that the worst three years of the great depression, 1933 – 1935, only ranks fourth with a default rate of 12.88%.</p>
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			<p>from the National Bureau of Economic Research (NBER), and the remainders of the data, 1966 – 2008, is obtained from the Federal Reserve Board, CFC, Standard and Poor's, and Moody's Investors Service. In addition, they use data from the Securities Industry and Financial Market Association (SIFMA).</p>	
18	<p>Gleason, C. A., & Mills, L. F. (2011). Do Auditor-Provided Tax Services Improve the Estimate of Tax Reserves?. Contemporary</p>	<p>The authors investigate the association between auditor provided tax services and the ability of firms to estimate their tax reserve in the face of an Internal Revenue Service</p>	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The authors rely on several data sources including S&P audit fees data, Compustat,</p>	<p>The authors argue that the provision of tax services by auditors may improve the quality of audit work, and thereby better financial reporting. If so, the knowledge spillover effect may improve the adequacy of the tax reserve. On the other hand, tax work may impair audit quality if it leads to</p>

	Accounting Research, 28, 1484–1509.	(IRS) investigation.	Large and MidSize Business Tax Return Data, and IRS examination data. The authors delete firms with non-complete IRS examination data, and firms that change their auditor during the previous 5 years and the current year. They also exclude from the sample with cases where the stock option tax benefit is so large that the tax paid on the return plus the stock options tax benefit minus current tax expense, exceeds 100 % of pre-tax income. The final sample comprises 497 firm-year observations over the period	<p>lower auditor independence. In this case, the authors argue that the decrease of auditor independence may cause firms to adjust their tax reserve to increase or smooth their earnings.</p> <p>The authors find that firms that purchase auditor provided tax services are better able to estimate the tax contingency and thus have a lower tax reserve. The results are consistent with the knowledge spillover effect. They argue that it is an indication that those firms must have booked an adequate tax reserve. The result is robust to the authors considering the identity of the auditor. The authors also find that their result is not driven by the possibility of delaying the effect of tax contingencies and intention of firms to smooth earnings</p>
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			2000 – 2002.	using the tax reserve.
19	Gleason, C. A., Mills, L. F., & Nessa, M. L. (2018). Does FIN 48 Improve Firms' Estimates of Tax Reserves?. Contemporary Accounting Research, 35, 1395–1429.	The authors investigate the adequacy and accuracy of tax reserves in term of Financial Accounting Standards Board (FASB) Interpretation No.48 and the influence of auditor provided tax services on tax reserves.	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The authors gather the financial data from the Compustat database, auditor fees are obtained from the Audit Analytics database, and analyst forecast data is gathered from the I/B/E/S database. They obtain the tax return and IRS examination data confidentially from the IRS. The final sample is 2,798 firm-year observations over the 2003 – 2014 period covering a positive IRS</p>	<p>The authors find that for both prior- and post- FIN 48, firms are adequately reserved for IRS tax assessments and settlements. For both prior and post FIN 48, firms adjust their tax reserve in the year of IRS assessments and settlements. They find that the overall adequacy or accuracy of reserves pre- and post-FIN 48 are not statistically different.</p> <p>Related to the impact of auditor provided tax services, they find that, overall, firms with low APTS are under-reserved for IRS assessments, while firms with high ATPS are over-reserved prior to FIN 48. However, post-FIN 48, there is no difference between the adequacy of tax reserves for firms with a high or low level</p>

			proposed deficiency or IRS settlement.	of APTS. In that case, they argue that FIN 48 eliminates the knowledge spillover benefit of APTS as it improves the availability of information for firms with low tax services.
20	Glover, B. (2016). The expected cost of default. <i>Journal of Financial Economics</i> , 119, 284–299.	The author aims to estimate firm-specific expected default cost that is not subject to selection bias.	<p>The author uses a dynamic capital structure model in estimating the expected cost of default.</p> <p>The author uses 2,505 U.S. public firms with at least 20 quarters data available in the CRSP and Compustat database from 1947Q1 to 2010Q2, excluding financials and utilities firms. The author uses quarterly aggregate earnings data from the</p>	<p>The author argues that the estimation of the cost of default using defaulted firms is subject to selection bias as firms with a higher cost of default tend to choose a lower level of leverage to mitigate default risk. Consequently, defaulted firms are those with a low cost of default. This selection bias thereby underestimates the default cost that is incurred during the default period</p> <p>The author finds that the mean (median) of cost of default is 45% (37%) of firm value. Using only defaulted firms, the average</p>

			<p>National Income and Product Accounts.</p>	<p>cost of default is 25%. On an industry basis, the average cost of default is 38.9% for food, 46.3% for mining and minerals, 36.4% for oil, 45.2% for clothing, 42.2% for consumer durables, 43.5% for chemicals, 53.2% for drugs, perfume, and tobacco, 37.4% for construction, 36.9% for steel, 35% for fabricated products, 48.9% for machinery, 39.7% for automobiles, 41.3% for transportation, 44.2% for retail stores, and 47.4% for other.</p> <p>The author also finds a positive relationship between the average cost of default and credit ratings. It shows that firms which previously had a high credit rating but then defaulted, have a higher cost of default.</p>
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				In addition, the author finds that firms with higher market to book ratio and investment rates have higher default cost.
21	Hsu, P. H., Lee, H. H., Liu, A. Z., & Zhang, Z. (2015). Corporate innovation, default risk, and bond pricing. <i>Journal of Corporate Finance</i> , 35, 329–344.	The authors examine how innovation, as measured using patent records, is related to default risk and bond pricing. They argue that the effect of corporate innovation on the price of bond is underexplored despite corporate innovation possibly determining the credit risk profile and bring an important influence on firm value. They are motivated to explore the extent to which	The authors use regression analysis to link the test variables and controls. The sample consists of 143 corporate bond issues by U.S. firms over the period 1976 – 2006. The authors gather patents data from the updated National Bureau of Economic Research (NBER). They then combine that data from the Compustat and CRSP databases.	The authors argue that firms with more and higher quality patents have greater capacity to compete in the market. Hence, they are more likely to obtain first mover advantages and assume a market leader role. In addition, patents may increase the entry barriers for newcomers to the business. All these positive factors would improve firms’ financial stability, thereby reducing default risk. Furthermore, they argue if corporate innovation leads to lower default risk, thereby improving firm’s solvency, bond investors may demand a lower risk premium for firms with stronger

		bond investors value these corporate innovations.		<p>innovation performances.</p> <p>Consistent with their prediction, they find that firms with more and higher impact patents with higher generality and originality scores are less likely to default. They also find that innovative firms have lower yield on newly issued bonds in the primary market and lower excess bond returns in the secondary market.</p>
22	Kinney, W. R., Palmrose, Z. V., & Scholz, S. (2004). Auditor Independence, Non-Audit Services, and Restatements: Was the U.S. Government Right?. Journal of Accounting Research,	<p>The authors examine whether non-audit services fees are related to the restatement of financial statements.</p> <p>The authors exploit the data from the period prior to the mandatory</p>	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The authors use several public sources such as the Lexis-Nexis News, Securities Class Action Alert, and Form 8-K library files to identify all</p>	<p>The authors do not find a statistically significant relationship between restatement and fees for financial information system design and implementation or internal audit services. The authors do find a significant positive relationship between unspecified non-audit services and restatements. In contrast, they find a significant negative relationship</p>

	42, 561–588.	requirements for fees disclosure.	interim and annual restatement published from 1 st January 1995 - 31 st December 2000. They include all GAAP violation restatements of U.S. companies and exclude restatements that related to GAAP-to-GAAP accounting changes. They also exclude firms that are not audited by one of the largest seven U.S. audit firms. Then, they match the restating firms with non-restating firms for a similar period, similar industry, similar audit firm, and nearest revenue. The fees data is privately obtained from the	between tax services fees and restatements. This result holds when the authors use the overall sample and for subsamples of matched pairs, Form 10K restatements, material misstatements, fees of \$1 million or more, and larger registrants. The authors argue that the results indicate the benefits resulting from APTS.
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			<p>largest seven U.S. auditing firms. The authors also use several other data sources such as the Compustat and SEC EDGAR databases.</p> <p>The final sample consists of 979 fee-year observations on 617 restating registrant U.S. firms.</p>	
23	<p>Klassen, K. J., & Laplante, S. K. (2012a). Are U.S. Multinational Corporations Becoming More Aggressive Income Shifters?. <i>Journal of Accounting Research</i>, 50, 1245–</p>	<p>The authors examine the extent of multijurisdictional income shifting by U.S. multinationals. They also examine whether income shifting has changed overtime (22 years sample period).</p>	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The authors gather a sample from all U.S. firms with foreign sales, pre-tax earnings, and tax information from Compustat during the</p>	<p>The authors find that U.S. companies have become more active in shifting income to foreign jurisdictions. Holding constant tax rate differences between U.S. and foreign jurisdictions, they estimate that 380 corporations with low average foreign tax rates have shifted approximately \$10 billion of additional more income out of the United States annually during 2005-</p>

	1285.		<p>period 1988 – 2009.</p> <p>Observations are excluded if firms do not have five-year data to calculate average foreign tax rate incentives, have negative five-year summed pre-tax domestic or foreign income, and have average foreign tax rate incentive less than 1 or greater than 1. The final sample consists of 8,074 firm-year observations.</p>	<p>2009 relative to 1998-2002.</p> <p>Furthermore, they find that firms with low average foreign tax rates shifted income more aggressively out of the U.S. following declining IRS audit intensity, a beneficial U.S. tax law change, and a marked increase in non-U.S. transfer pricing enforcement activities.</p>
24	<p>Klassen, K. J., & Laplante, S. K. (2012b). The Effect of Foreign Reinvestment and Financial Reporting Incentives on</p>	<p>The authors examine two issues relating to the tendency of U.S. multinationals to shift income between the U.S. and foreign jurisdictions.</p>	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The authors gather, from the Compustat database, a sample</p>	<p>The authors argue that when the foreign tax rate is less than the domestic tax rate, there are two types of firms based on their reinvestment-related incentives. First, firms with a foreign subsidiary viewed as having low reinvestment-related incentives</p>

	<p>Cross-Jurisdictional Income Shifting. Contemporary Accounting Research, 29, 928–955.</p>	<p>First, they test whether foreign reinvestment-related incentives influence income shifting by multinationals. Second, they test whether financial reporting incentives influence income shifting behaviour.</p>	<p>from all U.S. firms with foreign sales during the 1993 – 2006 period. Observations are excluded if firms have negative five-year summed pre-tax domestic or foreign income and have average foreign tax rate incentive less than 1 or greater than 1. The final sample consists of 3,829 firm-year observations.</p>	<p>because the foreign operations are mature and so further income shifting is not a value maximizing activity. Second, firms with a foreign subsidiary viewed as having high reinvestment-related incentives and so the firm tends to shift income to that foreign subsidiary. The authors find that firms with low foreign tax rates relative to domestic tax rates shift significantly more income from U.S. to the foreign subsidiaries with high reinvestment-related incentives. However, they do not find that reinvestment incentives affect income shifting into the U.S.</p> <p>Related to the second issue, they argue that financial reporting rules allow firms to avoid recording deferred taxes on the financial statements if they decide earnings</p>
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				as permanently reinvested. They find that more aggressive financial reporting firms and those that report lower tax expense by designating earnings outside the U.S as permanently reinvested, are more responsive to income shifting incentives than other firms even after controlling for reinvestment incentives. This shows that firms with greater financial reporting incentives shift more income out of U.S.
25	Krishnan, G. V., & Visvanathan, G. (2011). Is There an Association between Earnings Management and Auditor-Provided Tax Services?. Journal of the American Taxation Association,	The authors examine whether auditor provided tax services mitigate earnings management. In particular, they investigate whether auditor provided tax services prevent earnings management and whether tax avoidance is	The authors use regression analysis to link the test variables and controls. For the first research question, the authors gather the sample from the Compustat over the period 2000 – 2007. They then	They find a negative relationship between auditor provided tax services and earnings management as measured by loss avoidance. This result is robust to the authors using only a sample that reports tax fees and a matched sample of observations with and without tax fees. They also find that in the pre-SOX period,

	33, 111–135.	related to auditor provided tax services.	<p>merge this data with the Audit Analytics to obtain fees paid to auditor information. The final sample for the first question is 2,935 firm-year observations (1,750 unique firms).</p> <p>For the second research question, the authors construct a new sample by combining Compustat data and Audit Analytics data during the period 2000 – 2007. The final sample for the second research question is 6,299 firm-year observations.</p>	<p>auditor provided tax services are positively related to earnings management, while in the post-SOX period, auditor provided tax services are negatively related to earnings management.</p> <p>They find that auditor provided tax services are negative and significantly related to earnings management for firms with a large book-tax difference. The result is also robust to the authors controlling for endogeneity and using alternative model specifications and measurement of earnings management. However, they find that their result is driven by larger firms (firms with assets more than \$200 million).</p> <p>Furthermore, for the relationship between auditor provided tax services and tax</p>
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				avoidance, they do not find any evidence to support the argument that auditor provided tax services influence tax avoidance activities. This result is robust to using several alternative measures of tax avoidance and model specifications.
26	Krishnan, G. V., Visvanathan, G., & Yu, W. (2013). Do Auditor-Provided Tax Services Enhance or Impair the Value Relevance of Earnings?. Journal of the American Taxation Association, 35(1), 1–19.	The authors investigate the influence of auditor provided tax services on investors' valuation.	The authors use regression analysis to link the test variables and controls. The authors gather the data from the Audit Analytics and Compustat database. The final sample consists of 27,919 firm-year observations of U.S. firms over the period 2000 – 2008.	The authors find a positive relationship between the ratio of tax fees to total fees and the value-relevance of earnings. Moreover, they find a lower value-relevance for earnings in the year when firms switch from their auditor to other providers of tax services. They argue that the results provide evidence that investors perceive auditor provided tax services as providing benefits through knowledge spillover effects.
27	Krishnan, J., Sami, H., & Zhang, Y. (2005).	The authors examine whether the provision of	The authors use regression analysis to link the test	The authors find a negative relationship between the ratio of non-audit fees to total

<p>Does the Provision of Nonaudit Services Affect Investor Perceptions of Auditor Independence?. Auditing: A Journal of Practice & Theory, 24, 111–135.</p>	<p>non-audit services by auditors is perceived as impairing auditor independence in appearance. They examine the relationship between non-audit services fees and the earnings response coefficient for the first, second, and third quarters following the release of proxies containing fee disclosures.</p>	<p>variables and controls.</p> <p>The sample consists of U.S. firms that filed proxies in 2001. The authors eliminate firms that change auditors during the 2001 period, firms with missing earnings announcement dates, firms with missing earnings per share information on the I/B/E/S database, and firms with earnings announcement later than December 2001.</p> <p>The authors use several other sources such as the Compustat, CRSP, and I/B/E/S database to gather</p>	<p>fees and the earnings response coefficient. They also find a negative relationship between the amount of non-audit fees and the earnings response coefficient. Those relationships exist in first, second, and third quarters. For unexpected fees, the authors find that there is no relationship in the first quarter except for the ratio of non-audit fees to total fees. However, they find significant relationships in the second and third quarter. They argue that the results provide evidence that investors perceive auditor independence impairment as a result of non-audit services. The results are robust to the authors considering only Big5 clients.</p> <p>When considering the size of firms, the authors find that there is little or no</p>
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			<p>necessary information.</p> <p>The final sample consists of 2,816 firms for the model using actual fees and 2,390 for the model using unexpected fees.</p>	<p>association between non-audit services and earnings response coefficient. This indicates that reputation and litigation risks may help maintain auditor independence. Regarding the influence of market-to-book ratio, they find limited evidence of impairment of auditor independence in the first and third quarters for small market-to-book ratios firms, and no association between non-audit services and earnings response coefficient for firms with high market-to-book ratios.</p>
28	<p>Lisic, L. L. (2014). Auditor-Provided Tax Services and Earnings Management in Tax Expense: The Importance of Audit Committees. Journal of</p>	<p>The author examines the influence of audit committee effectiveness on the relationship between auditor provided tax services and earnings management through tax</p>	<p>The author uses regression analysis to link the test variables and controls.</p> <p>The sample consists of S&P firms for the year 2003. The author excludes financial and</p>	<p>The author argues that because auditor provided tax services need to be approved by the audit committee, the characteristics of the committee may influence the approval process. The author argues that the probability that an effective audit committee approves auditor provided tax</p>

	Accounting, Auditing & Finance, 29, 340–366.	expense.	<p>utility firms, firms that change auditors during the year, firms with missing values of necessary data, firms with negative pre-tax income or negative Q4 effective tax rates, firms that do not purchase tax services from auditors.</p> <p>The author relies on several data sources. The author hand collects the fees data and audit committee information from proxy statements. Analyst forecast and actual earnings per share data are obtained from the I/B/E/S database, while accounting</p>	<p>services that impair auditor independence is low. In the event that such audit committees approve those services, then they will provide a better monitoring mechanism to lower the potential impairment of independence. As a consequence, effective audit committees are more likely to induce knowledge spillover effects resulting from auditor provided tax services, and thereby a lower level of earnings management.</p> <p>The author focuses on earnings management through the tax expense account because independence impairment or knowledge spillover effects from auditor provided tax services are more likely to occur through that account.</p>
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			<p>data is obtained from the Compustat database.</p> <p>The final sample consists of 799 firms.</p>	<p>The author finds that greater effectiveness of the audit committee is related to a lower positive relationship between auditor provided tax services and earnings management in tax expense. Furthermore, the author finds that auditor provided tax services are positively related to earnings management in tax expense for firms with audit committee effectiveness below the median in the sample. In contrast, auditor provided tax services are negatively related to earnings management in tax expense for firms with audit committee effectiveness above the median sample.</p> <p>The results are robust to considering the possibility that audit committee effectiveness could vary non-linearly with certain audit committee characteristics, to</p>
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				controlling for overall corporate governance, and addressing endogeneity concerns. Furthermore, the author does not find that the relationship between auditor provided tax services and discretionary accruals is related to audit committee effectiveness. This suggests that focusing on earnings management in tax expense leads to better detection of the impact of auditor provided tax services on earnings management. The author also finds that the result is externally valid by obtaining similar results for 250 S&P 500 companies in 2009.
29	Maydew, E., and Shackelford, D. (2007). The changing role of auditors in corporate tax planning. In:	The authors examine the influence of accounting events such as accounting scandals, the passage of the Sarbanes-Oxley Act,	The authors use data description approach to draw conclusions. The sample is S&P 500 firms	The authors find that S&P 500 companies pay similar amounts of fees for audit and for tax work to their auditors in the year 2001. However, in the year 2003, the amount paid for audit work is twice that

	Auerbach, A., Hines, J., Slemrod, J. (Eds.), Taxing Corporate Income in the 21st Century. Cambridge University Press, New York, NY, pp. 307 – 337.	and SEC and PCAOB regulatory actions on the changing role of auditors in corporate tax planning.	as of 31 st December 2003. The authors collect auditor fees data from firm proxy statements. They exclude firms with missing tax fees information in the years 2001 – 2003. The final sample is 248 companies that report both audit and tax fees.	for tax work. Further, they estimate that those companies would pay four times for the audit work compared to tax work in the year 2004. They also find that tax practice of the largest accounting firms is stable during that period. The results may show that the decline of tax work of incumbent auditors is related to shift in clients among the providers of tax services.
30	McGuire, S. T., Omer, T. C., & Wang, D. (2012). Tax Avoidance: Does Tax-Specific Industry Expertise Make a Difference?. The Accounting Review, 87(3), 975–1003.	The authors examine the relationship between auditor tax-specific industry expertise and company tax avoidance.	The authors use regression analysis to link the test variables and controls. The authors gather the data from the Audit Analytics and Compustat databases for the period 2002 – 2009. They exclude observations with negative pre-tax income, with	The authors find that companies that purchase tax services from a tax expert auditor engage in greater tax avoidance. Furthermore, they find that overall expertise (audit and tax) of auditors is related to greater tax avoidance. They argue that this result indicates that auditors with high overall expertise are capable of combining their audit and tax expertise in term of developing tax strategies that

			0 tax fees paid to external auditors, and industry and MSA market with less than two audit firms and two clients. The final sample consists of 8,025 firm-year observations for 2,513 unique firms.	benefit clients from both tax and financial statement perspectives. Overall, the results suggest that auditors tax-specific industry expertise influences clients' tax avoidance.
31	Paterson, J. S., & Valencia, A. (2011). The Effects of Recurring and Nonrecurring Tax, Audit-Related, and Other Nonaudit Services on Auditor Independence: Effects of Recurring and Nonrecurring Nonaudit	The authors investigate the relationship between non-audit services and auditor independence and distinguish between recurring and non-recurring non-audit services. In particular, they examine whether financial restatements are a function of recurring non-audit	The authors use regression analysis to link the test variables and controls. The authors use the Audit Analytics database to obtain information about restated financial statements. They include only restatements for accounting rule application failures, financial fraud,	The authors find that recurring auditor provided tax services are negatively related to restatements. They find that non-recurring auditor provided tax services are positively related to restatements and thus conclude that the evidence in earlier studies indicating knowledge spillover rather than impairment of independence must have been dominated by recurring assignments.

	<p>Services. Contemporary Accounting Research, 28, 1510–1536.</p>	<p>services.</p>	<p>irregularities, and misrepresentations. Restatements related to non-financial statement disclosures, omissions, or corrections and errors involving clerical applications are excluded from the sample.</p> <p>The authors gather auditor, audit fees, and non-audit fees from the Audit Analytics database, accounting data is obtained from the Compustat, and stock returns data is gathered from the Eventus database.</p>	<p>However, the significant relationship applies only to restatements associated with cumulative abnormal returns below the mean. For the full sample, they do not find a significant relationship between non-recurring tax services and restatements.</p> <p>For the other services of non-audit services, they find that recurring and non-recurring engagements are both positively associated with restatements and their difference is not statistically significant.</p> <p>They conclude that non-recurring tax and audit-related non-audit services have a greater threat to auditor independence compare to the recurring ones.</p>
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			<p>The sample comprises data on 7,042 U.S. firms during the period 2003 – 2006. Specifically, 1,709 firms with 3,232 restatement and 5,333 firms with 15,087 non-restatement observations.</p>	
32	<p>Rego, S. O. (2003). Tax-Avoidance Activities of U.S. Multinational Corporations. Contemporary Accounting Research, 20(4), 805–833.</p>	<p>The author examines the effect of firm characteristics such as size and profitability on the extent of tax avoidance activities.</p>	<p>The author uses regression analysis to link the test variables and controls.</p> <p>The author examines the issues on a broad sample of U.S. domestic and multinational corporations (broader sample). The author also tests the issues on a sub-sample of U.S. multinational</p>	<p>The author finds that larger firms, both for the full sample and for just U.S. multinationals, have higher worldwide ETRs than smaller firms. The author argues that it supports the argument that larger firms face political costs which limit their tax avoidance activities. Further, the author finds, for the full sample, that firms with higher income have lower worldwide ETRs. Specifically for U.S. multinationals, the author finds that worldwide ETRs are</p>

			<p>corporations.</p> <p>The author starts the sample selection process by obtaining data from the Compustat database over the period 1990 – 1997 period. The author deletes foreign firms, banking, insurance, and utility firms, firms with negative assets or stockholder’s equity, negative and zero income tax expense and pre-tax income. The author sets effective tax rate (ETR) to one for firms with ETR more than one and excludes observations if they are in the top or bottom 1% of</p>	<p>decreasing in both U.S. and foreign pre-tax income. The author also finds that multinationals with a higher proportion of foreign operations have lower worldwide and foreign ETRs. These results support argument that economies of scale plays significant role for tax planning.</p>
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			the distribution of return on assets to eliminate the effect of extreme values. This specification yields 19,737 firm-year observations on 5,379 U.S. firms.	
33	Robinson, D. (2008). Auditor Independence and Auditor-Provided Tax Service: Evidence from Going-Concern Audit Opinions Prior to Bankruptcy Filings. Auditing, 27, 31–54.	By focusing on bankruptcy firms, the author investigates the relationship between auditor provided tax services and auditor independence as reflected in the issue of correct going-concern opinions.	The author uses regression analysis to link the test variables and controls. The sample consists of 209 U.S. bankrupt firms obtained from the New Generation Inc.’s Bankruptcy Datasource over the period 2001 – 2004. The author also uses other databases such as the Compustat for calculating	The author does not find a significant relationship between audit or non-audit fees to the probability of issuing a going-concern opinion. However, after dividing the non-audit fees into tax and non-tax fees, The author finds a positive relationship between tax fees and the issuance of a correct going-concern opinion prior to a bankruptcy filing. The author argues that the results indicate that auditors who also provide tax services

			variables.	<p>are more likely to issue correct going-concern opinion prior to bankruptcy. The results are robust to the author using an unexpected fees variable instead of total fees. The results also hold to the author addressing endogeneity concerns, including only going-concern firms with a first-time going concern opinion, using only the period after the mandatory tax disclosure requirement, and deleting firms with large tax services fees. The author also finds that using a matched non-bankrupt sample, the tax fees variable is insignificantly related to going-concern opinion. The evidence thus shows that the positive relationship between tax fees and correct going-concern opinion does not resulted from the auditor being conservative.</p>
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34	<p>Seetharaman, A., Sun, Y., & Wang, W. (2011). Tax-Related Financial Statement Restatements and Auditor-Provided Tax Services. <i>Journal of Accounting, Auditing & Finance</i>, 26, 677–698.</p>	<p>The authors examine the influence of auditor provided tax services on reporting quality related to tax. In particular, they investigate the association between auditor provided tax services and tax-related restatements of financial statements in the post-SOX period.</p>	<p>The authors use regression analysis to link the test variables and controls.</p> <p>The authors gather the restatement data from the Audit Analytics database during the 2003 – 2005 period. To classify whether restatements are related to violation of GAAP in respect of tax, the authors obtain information from one of the Big4 accounting firms that maintains information related to restatements filed with the SEC. Specifically, tax-related restatements include those related to Financial</p>	<p>The authors find a significant negative relationship between auditor provided tax services and tax-related restatements of financial statements. However, they do not find a significant relationship between auditor provided tax services and general restatements. They argue that the results indicate that firms which purchase auditor provided tax services benefit from the knowledge spillover by having fewer tax-related financial statement problems than firms that purchase their tax services from sources other than the incumbent auditor.</p>
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			<p>Accounting Standard 109 issues (accounting for income taxes), improper treatment of deferred tax liabilities or assets, valuation allowances, tax contingencies, sales taxes, state income taxes, and foreign taxes or tax credits. They also rely on the Compustat database for necessary accounting information. The final sample comprises 3,888 firm-year general restatements by 2,116 firms and 259 firm-year tax-related restatements by 150 firms.</p>	
35	Simunic, D. A. (1984). Auditing, Consulting,	The author examines the decision of firms to	The author uses regression analysis to link the test	The author finds that firms that purchase management advisory services have higher

	<p>and Auditor Independence. <i>Journal of Accounting Research</i>, 22, 679–702.</p>	<p>purchase management advisory services and audit services if the production functions are interrelated and they investigate the existence and pricing effect of knowledge spillover.</p>	<p>variables and controls.</p> <p>Starting with the sample of 397 observations in Simunic (1980), the author includes companies that use big 8 auditors, provide information on the fees paid to the auditor for managerial advisory services during the year ended December 1976 or ending in 1977, and report assets less than \$3 billion. The final sample comprises 263 U.S. companies.</p>	<p>audit fees compared to firms that do not purchase those services. The author concludes that the observed fee increase is an indication of a beneficial knowledge spillover resulting from the joint provision of managerial advisory services and audit services.</p>
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